DEPARTMENT CHRONOLOGY

Adam, Claire, Lucy, Raychel and Conor

SCHEDULE 1: Before Adam's admission

Date	Events (before Adam's admission)	Reference
14.08.1972	Health & Personal Social Services (Northern Ireland) Order 1972 passed	
October 1983	Publication of NHS Management Inquiry (1983) Report (the Griffiths Report)	London: HMSO
04.06.1984	Publication of Department of Health & Social Security (1984) Griffiths Report: Health Authorities to Identify Managers	Press release no.84/ 173, 4 June
June 1986	Publication of 'Hyponatraemia, convulsions, respiratory arrest, and permanent brain damage after elective surgery in healthy women' (Arieff & Allen) the New England Journal of Medicine Vol.314	Ref: 220-002-260
1988	Clinical Resource Efficiency Support Team (CREST) established under the auspices of the DHSS (Northern Ireland) Medical Advisory Structure	
January 1989	Publication of DoH's White Paper: 'Working for Patients' and 'Working for Patients: Medical Audit Working Paper No.6 - both setting out plans for a comprehensive system of medical audit.	Department of Health, London
1989	Health Service Management: Preservation, Protection & Destruction of Records: Responsibility of Health Authorities under the Public Records Act	Department of Health, London HC (1989) 20
1989	Northern Ireland Regional Audit Advisory Committee (NIRAAC) set up as a sub-committee of the Northern Ireland Council for Post-Graduate Medical and Dental Education	
1990	Circulation of Guide to Consent for Examination or Treatment	Department of Health, London HC (1990) 22
1990	Guidelines for Clinicians on Medical Records & Notes	Royal College of Surgeons of England
May 1990	Report of the Confidential Enquiry into Peri-operative Deaths (1990)	NCEPOD
September 1990	Circulation of Renal Transplantation in Small Children (RBHSC Renal Transplant Protocol).	Ref: WS-002/2, p.52
05.02.1991	Health and Personal Social Services (Northern Ireland) Order 1991 passed	
1991	Department publish 'HSS Trusts: A Working Guide'	
1991	Department policy document 'People First' introduced a division between the commissioning and provision of health and social services	
1991	Publication of Welfare of Children and Young People in Hospital (1991).	HMSO (Department of Health)
1991/1992	Publication of Report of the National Confidential Enquiry into Peri-operative Deaths (1991/1992)	

Date	Events (before Adam's admission)	Reference
1992	Publication of the Cadbury Report by Committee on the Financial Aspects of Corporate Governance and Gee & Co – setting new standards for corporate governance and accountability. The recommendations were accepted for the NHS in the codes of conduct on accountability to which all non-executives subscribed and which formed the foundation on which the probity of NHS Boards has rested since 1994	
March 1992	Circulation of: A Charter for Patients and Clients.	Northern Ireland Health and Personal Social Services Ref: WS-062/1, p.328
May 1992	Arieff et al publish 'Hyponatraemia and death or permanent brain damage in healthy children' BMJ, Vol. 304, May 1992 (Ref: 220-02-201).	
28.07.1992	Patient Consent to Examination or Treatment	NHS Management Executive SG (1992) 32
1993	Medical Ethics Today: Its Practice and Philosophy – providing the pre-requisites for Valid Consent	British Medical Association
1993	Standards for Records and Record Keeping	UKCC
1993	Risk Management in the NHS	NHS Executive Department of Health, London
1993	Circulation of Kidney Transplantation in Childhood: A Guide for Families	Ref: WS-002/3, p.124
01.10.1993	Circular METL 2/93 - Letter from Chief Executive of Health & Personal Social Services Northern Ireland to inter alia the Chief Executives of Trusts & Boards setting out the: *"framework of accountability which will exist between the Management Executive (ME) and HSS trusts in the future".*	Ref: WS-062/1, p.527
21.12.1993	Publication of Improving Clinical Effectiveness	NHS Management Executive EL(93) 113
1994	Report of the Allitt Inquiry: Independent Inquiry relating to deaths and injuries on the children's ward at Grantham and Kesteven General Hospital *"there must be a quick route to ensure that serious matters… are reported in writing to the Chief Executive of the hospital, and in the case of directly managed units, to the District Health Authority".*	London: HMSO, 1994
1994	Code of Conduct and Accountability	Department of Health & Social Services HSS-(PDD) 8/1994
1994	Guidelines for Clinicians on Medical Records & Notes	Royal College of Surgeons of England
23.02.1994	Central Medical Advisory Committee ("CMAC") meeting discusses 'NCEPOD'; clinical standards; and the 'clerking in of patients by house officers on-call out of hours' as a problem to be highlighted to the Minister	Ref: 320-004-001
June 1994	Clinical Audit & Quality of Practice in Anaesthesia	Royal College of Anaesthetists
27.07.1994	Publication of guidance for Reporting Adverse Incidents and Reactions, and Defective Products relating to Medical and Non-Medical Equipment, by the Management Executive.	Ref: WS-062/1, p.13

Date	Events (before Adam's admission)	Reference
05.09.1994	Meeting of Directors of Public Health (no CMO appointed at time, but Dr. Campbell present) recording poor compliance with CEPOD	Ref: 320-060-002
08.11.1994	SAC (Paediatrics) had voiced concern that a lack of standard practice in relation to the age limits for admission onto an adult ward "often caused problems." The matter was left for further consideration.	Ref: 320-049-006
December 1994	Publication of Bulletin on the Effectiveness of Health Service Interventions for Decision-makers: Implementing Clinical Practice Guidelines: Can guidelines be used to improve clinical practice?	No.8, Nuffield Institute for Health
1995	Circulation of British Association of Paediatric Surgeons- A Guide for Purchasers and Providers of Paediatric Surgical Services (revised ed. 1995).	
1995	Setting the Records Straight, A Study of Hospital Health Records	Audit Commission
1995	Circulation of Management of Formal & Informal Complaints	TP6/95
1995	HPSS Management Plan 1995/96 to 1997/98 including the following under 'Best Practice' it states: *"Providers need to continue to focus on improvement in standards of practice"* and *"Specifically units should ensure that there is a clear policy on: clinical audit as part of a programme to improve all aspects of service quality, not just clinical outcomes".*	Ref: WS-066/1, p.28
1995	Regional Multi-professional Audit Group (RMAG) created under the auspices of the Management Executive to encourage multi-professional audit.	
January 1995	Dr. Henrietta Campbell becomes CMO	
March 1995	Publication of Letter from Chief Executive of Health & Personal Social Services Northern Ireland to inter alia Chief Executives of Trusts & Boards enclosing: Explanatory Booklet setting out the Management Executive response to 'Being Heard'- Wilson Review Committee's Report on NHS complaints procedure.	Ref: WS-062/1, p.346
June 1995	Royal College of Surgeons of England issue Guidelines to Clinical Audit in Surgical Practice	Royal College of Surgeons of England
October 1995	Publication by GMC of Good Medical Practice- Guidance for Doctors- *"all doctors must work with colleagues to monitor and improve the quality of healthcare".*	GMC Ref: 314-001-001
06.10.1995	Circulation of A Guide to Consent for Examination or Treatment, circulated by the Management Executive of the Chief Executive.	Ref: 305-002-003 HSS(GHS)2/95, pgs.4-23
06.11.1995	Minutes of the Meeting of Directors of Public Health & CMO when it is noted that there was a growing view that the Area Audit Committees were becoming redundant	Ref: 320-066-002

SCHEDULE 2: Adam's death at the RBHSC

Date	Events (after Adam's death)	Reference
28.11.1995	**Adam's death**	
1996	UKCC 'Guidelines for Professional Practice' produced	Ref: 314-003-001

Date	Events (after Adam's death)	Reference
10.01.1996	Publication of Promoting Clinical Effectiveness: A framework for action in and through the NHS	NHS Executive (1996)
05.02.1996	Minutes of the Meeting of Directors of Public Health & CMO at which it is recorded that the Regional Audit Committee had not published reports (Dr. McConnell) and the Committee did not appear to be possessed of any direction and might be in need of restructuring (Dr. Watson). Also recorded was the view that the *"Committee was intended to be the driving force behind audit in Northern Ireland but lacked the infrastructure to accomplish this effectively"* (Dr. McClements)	Ref: 320-067-007
12.02.1996	Letter from Chief Executive of Health & Personal Social Services Northern Ireland to inter alia Chief Executives of Trusts & Boards providing: 'Guidance for staff on relations with the public and the media'	Ref: WS-062/1, p.468 BP3050/95
March 1996	Publication of Guidance on Implementation of the HPSS Complaints Procedure.	Ref: WS-062/1, p.351
25.04.1996	Letter from Francis Hanna & Company (Solicitors for Adam's mother) to the Royal indicating a potential claim and seeking his medical notes and records	Ref: 060-022a-042
June 1996	Note from Dr. Robert Taylor to Mr. George Brangam of Brangam Bagnall & Co dealing with Adam's fluid administration and explaining: *"Adam's kidneys had lost the ability to concentrate urine (polyuria) so they were unresponsive to ADH (anti-diuretic hormone). Therefore the dilutional hyponatraemia discussed in the paper by Arieff could not have occurred in this case … After the transplanted kidney failed to function I was very concerned that despite my best calculations and estimate of the losses I had not given sufficient fluid!"*	Ref: 059-004-007
18.06.1996	**Adam's Inquest – commencement of the evidence** Inquest carried out by John Leckey (Coroner for the District of Greater Belfast)	Ref: 011-016-114
19.06.1996	Draft Statement for the Royal prepared by Dr. Joe Gaston, refers to the Arieff paper and *"a number of renal transplants complicated by hyponatraemia leading to death in 10 (reported May 1996)"* In the light of that the draft Statement makes *"recommendations for the prevention and management of hyponatraemia arising during paediatric surgery"*: *1. Major surgery in patients with a potential for electrolyte imbalance should have a full blood picture (which includes haematocrit value) and an electrolyte measurement performed 2 hourly or more frequently if indicated by the patient's clinical condition.* *2. A serum sodium value of less than 128mmol/L indicates that hyponatraemia is present and requires intervention by the anaesthetist. A value of 123mmol/L or less indicates the onset of profound hyponatraemia and must be managed immediately.* *3. The operating theatre must have access to timely reports of the full blood picture and electrolytes to allow rapid intervention by the anaesthetist, when indicated"* *(Emphasis added)* A subsequent version of the Draft Statement (finalised in consultation with Consultant Anaesthetists Dr. Robert Taylor, Dr. McKaigue and with the subsequent approval of Dr P Crean) is faxed by Dr. George Murnaghan to Brangam Bagnall & Co. It refers to the: *"rare circumstances encountered in the Adam Strain case, and having regard to the information contained in the paper by Arieff et al (BMJ 1992) and additionally having regard to information which has recently come to notice that perhaps there may have been nine other cases in the United Kingdom involving hyponatraemia which led to death in patients undergoing renal transplantation"* It also states: *"that the future management of patients undergoing paediatric surgery will be carefully monitored and re-appraised having regard to this information which is now available.* *In particular all patients undergoing major surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs and where necessary intensive monitoring intensive monitoring of the electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomenon and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood pictures and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"*	Ref: 060-018-036 Ref: 060-014-025

Date	Events (after Adam's death)	Reference
	DLS have confirmed the following by a letter to the Inquiry: 1. Recommendations were drawn up for the prevention and management of hyponatraemia by those anaesthetists who would be involved in major paediatric surgical procedures. 2. The recommendations at Ref: 060-018-036 may be considered substantive in that they were drawn up by the only anaesthetists in NI who were performing such work. 3. There would have been no necessity or requirement to circulate the recommendations outside RBHSC or the Royal Hospitals Trust and the Trust did not do so.	Ref: 305-020-001
20.06.1996	A 'marked up' in manuscript[1] further revised version of the draft Statement is faxed back from Brangam Bagnall & Co to Dr. George Murnaghan, which states: *"that ~~the~~ in future management of patients undergoing major paediatric surgery with potential electrolyte imbalance will be carefully monitored and re-appraised having regard to this information which is now available.* *~~In particular~~ all patients undergoing major paediatric surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs and where necessary intensive monitoring intensive monitoring of the electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomen~~ona~~ and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood picture~~s~~ and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"*	Ref: 060-019-037 & Ref: 060-019-038
	Letter from Dr. Sumner to the Coroner advising of a paper submitted for publication of 'Paediatric Anaesthesia' on a case on dilutional hyponatraemia, which he intended to publish and have Professor Arieff write an editorial: *"The Journal has a wide readership worldwide so should go some way towards enlightening people on this rare (?) occurrence"*	Ref: 011-082-217
21.06.1996	A final version of the draft Statement is faxed at 13:06 from Brangam Bagnall & Co to Dr. George Murnaghan, which states: *"In the light of the rare circumstances encountered in the Adam Strain case, and having regard to the information contained in the paper by Arieff et al (BMJ 1992) and additionally having regard to information which has recently come to notice that perhaps there may have been nine other cases in the United Kingdom involving hyponatraemia which led to death in patients undergoing renal transplantation, the Royal Hospitals Trust wish to make it known that:* *in future all patients undergoing major paediatric surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs, and where necessary, intensive monitoring intensive monitoring of their electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomena and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood picture~~s~~ and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"* DLS have confirmed the following by a letter to the Inquiry: 1. This draft statement was prepared as a laymen's version of the recommendations at Ref: 061-018-036 by the Trust's management in conjunction with the Trust's solicitor. 2. Its last version on file remains labelled draft and its sole purpose was to inform the media. It was forwarded to the Trust's Director of Corporate Affairs on 21.06.95 in anticipation of media interest at the conclusion of the Inquest.	Ref: 059-008-024 & Ref: 059-008-025 Ref: 305-020-001
21.06.1996	**Adam's Inquest – continuation of the evidence**	
	Evidence from Dr. Taylor and Dr. Savage. During his evidence Dr. Robert Taylor produced a further statement identified as 'C5', which is identical to the draft statement faxed by Brangam Bagnall & Co to Dr George Murnaghan on 21st June 1996	Ref: 011-014-096 & Ref: 011-015-109 Ref: 011-014-107a for 'C5'
21.06.1996	Verdict on Inquest: *"Cause of death:*	Ref: 011-016-114

[1] The deletions are shown struck through and the additions are shown as underlined

Date	Events (after Adam's death)	Reference
	I(A) Cerebral Oedema *due to* *(B) Dilutional hyponatraemia and impaired cerebral perfusion during renal transplant operation for chronic renal failure (congenital obstructive uropathy)* *Findings:* *The onset of cerebral oedema was caused by the acute onset of hyponatraemia from the excess administration of fluids containing only small amounts of sodium and this was exacerbated by blood loss and possibly the overnight dialysis and the obstruction of the venous drainage to the head"*	
21.06.1996	Dr George Murnaghan noted that : *"other issues identified which relate to structure and process of paed renal transplant services – agreed with IWC [Ian Carson] that should deal with this as a RM [risk management] issue & arrange a seminar with HM Mulholland/E Hicks, JG Gaston/RH Taylor, M Savage/M O'Connor, IWC & GAM present asap"*	Ref: 059-001-001 (Dr Murnaghan's note)
22.06.1996	Report in the 'Belfast Telegraph' which states: *"In a statement the Trust said it is taking action in the light of the rare circumstances encountered in Adam's case and because of new information.* *In future all patients undergoing paediatric surgery who potentially have an imbalance in salt levels will be carefully checked.* *The Trust said that where necessary intensive monitoring will be undertaken and all anaesthetists will be made aware of the possible complications"*	Ref: 069A-102-423
02.07.1996	Letter from Brangam Bagnall & Co to Dr George Murnaghan referring to the sterling help of Dr Joe Gaston and commenting: *"it is not without note that* ***the Coroner did not issue a recommendation in this case****, which I believe was in large part due to the fact that the Deponents gave their evidence in a fair, objective and professional manner and at the same time were alert and aware of those issues which might cause an erosion of public confidence.* *… as you know the threat of litigation has already been mooted and I believe we need to meet to* ***discuss the way in which the Trust intends to meet that challenge****." (emphasis added)*	Ref: 060-020-039
10.07.1996	Letter from Dr Sumner to the Coroner enclosing a copy of the paper on dilutional hyponatraemia that he had accepted for publication in 'Paediatric Anaesthesia' (referred to in his letter of 20th June 1996, Ref: 011-082-217) and advising that Professor Arieff had agreed to write the editorial.	Ref: 011-088-223

SCHEDULE 3: Claire's death at RBHSC

Date	Event (after Claire's death)	Reference
23.10.1996	**Claire's death**	
08.11.1996	Monthly Paediatric Directorate Audit at which Claire's case was presented along with 3 others	Letters from DLS: 24.11.2010 & 10.01.2011
13.11.1996	Letter to CMO (Sir Kenneth Calman) providing the agreement of: (i) British Association of Medical managers, (ii) Central Consultants and Specialist Committee of the BMA, (iii) national Association of Health Authorities & Trusts, (iv) NHS Trust Federation on the implementation of: "*Maintaining Medical Excellence*", including that the job description of the Medical Director should bear responsibility for: *"ensuring that procedures are put in place and made known to all doctors employed by the trust… for reporting a colleague doctor… when they have concerns that their conduct, performance or health might be a threat to patients [and] investigating and taking appropriate action".*	Ref: WS-062/1, p.481
10.12.1996	Anaesthetic record keeping in Adam's case reviewed at an Audit meeting	Ref: WS-077/1, p.2

Date	Event (after Claire's death)	Reference
January 1997	Mr Clive Gowdy replaces Mr. John Hunter as Chief Executive of the Management Executive	
10.01.1997	Letter from the Dr. Henrietta Campbell (CMO) to Chief Executives of Trusts and Medical Directors asking them to put into effect the agreement in the letter of 13th November 1996 to Sir Kenneth Calman	Ref: WS-062/1, p.480 HSS(MD)3/97
19.03.1997	Letter from Brangam Bagnall & Co to Dr George Murnaghan (Medical Director) stating in relation to Adam that: *"I believe from a liability point of view, this case [Adam's] cannot be defended"*	Ref: 060-016-031
March 1997	Mr. Clive Gowdy replaces Mr. Alan Elliott as Permanent Secretary of the Department	
08.04.1997	Litigation brought by Adam's mother is respect of his death is settled without admission of liability and with the inclusion of a confidentiality clause	Ref: 060-0115-028
May 1997	Paediatric Medical Guidelines: RBHSC (1st edition), with contributions from: Drs. Bartholome (Claire), Hicks (Adam, Claire & Conor), O'Connor (Adam), Savage (Adam), Steen (Claire), Webb (Adam & Claire) The topics include: 'Vomiting' (under General), 'Headache' (under Neurology), 'Acute renal failure' (under Renal). There is no specific reference to hyponatraemia but under 'Vomiting' there is reference to raised intracranial pressure as a possible cause (p.13) and to U+E as investigations to consider. Whilst under management of renal failure there is reference to the restriction of fluids and to cerebral oedema in relation to indications for dialysis (p.116)	Ref: 238-002-072
May 1997	Alison Armour's article is published in the Journal of Clinical Pathology: 'Dilutional hyponatraemia: a cause of massive fatal intraoperative cerebral oedema in a child undergoing renal transplantation' [i.e. Adam]	Ref: WS-012/1, p.8
09.05.1997	Memorandum of Dr George Murnaghan to Drs. Savage, Webb and Taylor and Messrs. Keane and Brown advising them that Adam's case had settled but that: *"From a liability position the case could not be defended"*	Ref: 060-010-015
28.05.1997	Letter received by Department of Health and Social Services for reference: from L. Gillen setting out how the Northern Ireland Hospitals Authority should notify the Ministry of details of all untoward events involving patients in psychiatric or special care hospitals.	Ref: WS-075/1, p.32
December 1997	Publication of White Paper The New NHS- Modern Dependable, DH, introducing the concept of Clinical Governance.	Department of Health, London
1998	Good Medical Practice	GMC Ref: 315-002-001
30.04.1998	'Fit for the Future'- Consultation paper about the future of the health and personal social services in Northern Ireland.	Department of Health & Social Services
29.09.1998	SAC (Paediatrics) meeting, which considered a paper on 'Clinical Quality/Clinical Governance' and the CMO is recorded as explaining that 'new structures were being formulated to drive the quality agenda'	Ref: 320-008-002
October 1998	Dr. Miriam McCarthy becomes Senior Medical Officer	
25.11.1998	NI CMAC meeting held on 25.11.98 and discusses the 'review of paediatric surgery' and the CMO's view that greater specialisation was required to maintain skills in surgery & anaesthesia;	Ref: 320-035-007

Date	Event (after Claire's death)	Reference
	and 'clinical quality & clinical governance'	
02.12.1998	NI CMAC meeting at which 'clinical quality/clinical governance' is discussed with reference to 'Fit for the Future' and *'The NHS, Modern and Dependable'. It was recorded that "This area must progressed quickly and decisions on the way forward could not be delayed because of the setting up of the New Assembly"*	Ref: 320-006-005
December 1998	The Department commissions Healthcare Risk Resources International consultants to undertake a survey of risk management in all HPSS organisation. The terms of reference for the survey were to determine the level of application of RM practices within these organisations. Incident reporting was one of the items included in the survey.	Ref: WS-062/1, p.4
1999	Record-Managing Records in NHS Trusts and Health Authorities – this rendered Chief Executives and senior managers are personally accountable for record management.	Publication of HSC 1999/053
1999	Publication of HPSS Management Plan 1999/00-2001/02.	Ref: WS-066/1, p.54
February 1999	NHS Centre for Reviews & Dissemination: 'Getting Evidence into Practice', which summarises the results of systematic reviews of different dissemination and implementation interventions	Effective Health Care Bulletin Vol.5, No.1
February 1999	A First Class Service: Quality in the New NHS	Department of Health, London HSC 1999/033
February 1999	'Northern Ireland Health and Social Services Executive: A Survey of Risk Management in the HPSS Organisations', by Healthcare Risk Resources International, which included: Risk Management Strategy: *"greater efforts need to be made in order to ensure that the Strategy is endorsed fully by the Board of the Trust concerned and that all managers, clinicians and other professionals are aware of its contents"* Ref: 127-004-095 Incident Reporting*: "major deficiency relates to the very limited and, therefore, probably significant under-reporting of clinical incidents and 'near misses'. A major effort is needed in almost all Trusts to improve in this area"* Ref: 127-004-096 Patient Records: *"There was a low level of compliance with this issue amongst the majority of Trusts … Accordingly, there is a real need for most Trusts to develop an explicit policy document incorporating all of the elements shown, and for there to be a system in place for the routine audit of compliance with the policy" Ref*: 127-004-096 Supervision of junior staff: *"consultants found few examples of formal, written procedures for ensuring that clinical staff have ready access to advice and support from their seniors. This does not imply that such procedures are not in place, but these do need to be made more explicit. This is a particularly vulnerable arena in the context of clinical risk and needs more focussed attention"* Ref: 127-004-097 Claims Management: *"few examples of a claims management policy"* Ref: 127-004-098	Ref: 127-004-095
09.02.1999	Dr. Robert Taylor invites a number of colleagues (including Consultant Anaesthetists and Consultant Paediatricians) to convene meetings regarding the Clinical Implications and implementation of the recent "*Framework for the Future*" document for Paediatric ICU – in particular he wished to consult widely on agreed guidelines for admission, initial management and transfer of critically ill infants and children	Ref: 093-035 (appended to PSNI interview)
10.02.1999	Departments (Northern Ireland) Order 1999 passed - establishes the Department of Health Social Services and Public Safety as a 'devolved Department' in December 1999	
March 1999	Publication of Putting It Right: The Case for Change in Northern Ireland's Hospital Service, by DHSS HSSE.	Ref: WS-066/1, p.107
01.04.1999	National Institute for Clinical Excellence (NICE) established for England & Wales	

Date	Event (after Claire's death)	Reference
20.04.1999	Letter sent by A.Gault seeking the provision of items for inclusion on the agenda for the official level Accountability Review meetings to be held in June 1999.	Ref: WS-066/1, p.52
09.08.1999	Circulation of HPSS Management Plan 1990/00-2001/02: Further Guidance for Year 2000/01.	Ref: WS-066/1, p.95
17.11.1999	The 1999 Report of the National Confidentiality Enquiry into Perioperative Deaths is published compiled from data from 1st April 1997 – 31st March 1998, with the following findings in relation to fluid management: *"•Fluid imbalance can contribute to serious postoperative morbidity and mortality.* *•Fluid imbalance is more likely in the elderly who may have renal impairment or other comorbidity.* *•Accurate monitoring, early recognition and appropriate treatment of fluid balance are essential.* *•Fluid management should be accorded the same status as drug prescription.* *•Training in fluid management, for medical and nursing staff, is required to increase awareness and spread good practice.* *•There is a fundamental need for improved postoperative care facilities"* *('Key Points, p.68, emphasis added)* See also: *"• The documentation on fluid charts was often poor.* *• Doctors and nurses of all grades need to understand the clinical importance, and ensure the accurate recording, of fluid intake and output.* *• Multidisciplinary review of the problem and development of good local working practices is required.* *• Fluid charts are important documents that need to be retained and appropriately filed for future reference."* *('Key Points, p.84, emphasis added)*	NCEPOD
2000	Northern Ireland Executive's first Programme for Government (2000). One of the five priorities was 'Working Together for a Healthier People'.	
14.01.2000	Circulation of The Public Interest Disclosure (Northern Ireland) Order 1998- Whistleblowing in the HPSS.	Ref: WS-062/1, p.474
07.02.2000	Meeting of the Directors of DPH/DHSS held on 07.02.00 and discuss 'regional reports on services for acutely ill children and paediatric surgical services' including problems out of hours and rural hospitals	Ref: 320-073-001
April 2000	Publication of Guidance on Handling HPSS Complaints: Hospital and Community Health and Social Services.	Ref: WS-062/1, p.404

SCHEDULE 4: Lucy's death at the RBHSC

Date	Events (after Lucy's death)	Reference
14.04.2000	**Lucy's death**	
14.04.2000	Dr. Jarlath O'Donohoe notifies Dr Kelly (Medical Director, Erne Hospital) of Lucy's death and the circumstances around her stay at the Erne Hospital	Ref: 072-004-192 & Ref: 075-013-055
14.04.2000	Dr. Jim Kelly (Medical Director, Sperrin Lakeland Trust) advises Hugh Mills (Chief Executive, Sperrin Lakeland Trust) of adverse incident re Lucy at 09:00: *"He advised that there could be a situation where the wrong drug or incorrect dose/level of fluids may have been prescribed"* Dr. Kelly also requests a full review	Ref: 030-010-017 & Ref: 036b-058-094 Ref: 030-007-012
14.04.2000	Dr. Kelly requests Eugene Fee (Director of Acute Hospital Services, Erne Hospital) to establish a review of Lucy's care at the Erne Hospital	Ref: 030-003-005

Date	Events (after Lucy's death)	Reference
14.04.2000	Eugene Fee agrees to jointly coordinate, with Dr. William Anderson (Clinical Director of Women & Children's Services, Erne Hospital), the review of Lucy's care at the Erne Hospital. A briefing of Sperrin Lakeland Trust states that: *"The review included; a case note review; review of written comment from staff involved in Lucy's care; discussions with other relevant staff; an external opinion on specific clinical matters from Dr. M. Quinn, Consultant Paediatrician, Altnagelvin Trust"*	Ref: 030-003-005
19.04.2000	Eugene Fee and Dr. Anderson met to review Lucy's case notes and agreed the following action plan: (i) Dr. O'Donohoe, Dr. Malik, Sister Edmunson, Staff Nurse McManus, Nurse McCaffery, Staff Nurse MacNeill and Dr. Auterson (Consultant Anaesthetist) to be asked to provide a factual account of the sequence of events from their perspective; (ii) Case notes to be made available for reference; (iii) Dr. Anderson to speak to Dr. O'Donohoe and request that he share with the staff (in confidence) the verbal report of the cause of death received (iv) Arrangements to be made to share information with Lucy's parents (v) Eugene Fee to establish the nature of Rota virus infection (vi) *"Dr. Anderson and Mr. Fee would need an external expert Paediatric opinion on the management of Lucy's care"*	Ref: 033-102-285
19.04.2000	Meeting between Hugh Mills and Martin Bradley (Chief Nurse at the Western Health and Social Services Board), during which Hugh Mills *"advised him of the issues"*. Hugh Mills informs Dr. William McConnell (Director of Public Health for the Western Health and Social Services Board) that the circumstances of Lucy's death were still *"being examined"*	Ref: 030-010-017 Ref: 030-010-017
20.04.2000	Eugene Fee informed Hugh Mills that Lucy's notes recorded a comment: *"from Dr. O'Donoughoe[sic] that he was uncertain about the instructions he gave staff about the flow of IV fluids. Child had been given 100mls per hour for 4 hours. He states he meant this to be 100mls per hour for the first hour and 30mls per hour thereafter. However, when child collapsed anaesthetic support had prescribed more fluids. Post mortem results indicated cerebral oedema."* Eugene Fee informed Hugh Mills that he felt he required advice from a Paediatrician. Hugh Mills agreed to arrange it and inquired whether Dr. Jarlath O'Donohoe should continue to see and treat patients. Eugene Fee advised him that they thought he should continue Hugh Mills asked Dr. Murray Quinn to provide a report	Ref: 030-010-017
21.04.2000	Hugh Mills asked Eugene Fee to contact Dr. Quinn to *"advise him of the main issues we need to examine and forward case notes to him"* and to *"ensure that Dr. O'Donoughoe[sic] is advised he is aware of involvement of Dr. Quinn"* Hugh Mills rang Dr. McConnell and left a message to advise him that Dr. Quinn had been requested to provide the Trust with advice on the case	Ref: 030-010-018
May 2000	In England, CMO published "An Organisation with a Memory" on issues of patient safety and the standards of performance	Ref: WS-062/1, p.4
08.05.2000	Mr Frawley (General Manager WHSSB) emails Dr McConnell (Director of Public Health WHSSB) and Mr Bradley ((Chief Nursing Officer WHSSB) re "Untoward Infant Death". *"I think it is important that we get some definitive advice and I would be grateful if you would keep me apprised."*	Ref: 318-051-001
14.06.2000	Meeting between Hugh Mills and Clive Gowdy[2]	Ref: 030-009-016
22.06.2000	Dr. Murray Quinn provides his review of Lucy's care to Eugene Fee. His finding on 'fluids' was: *"She was treated with Solution 18 which would be appropriate. On looking at the volume of fluids over the 7 hour period between admission and 3.00am when she had the possible seizure she got a total of*	Ref: 071-017-304 & Ref: 075-013-051

[2] NB: Inquiry Witness Statement of Clive Gowdy at WS-062/1, p.2 when he states he only became aware of Lucy's death in February 2004 through Dr Ian Carson

Date	Events (after Lucy's death)	Reference
	550mls. This would include 150mls oral and 400mls i.v. as the intravenous drip was running at 100mls/hr over a 4 hour period. Calculating the amounts over that period of time this would be about 80mls/hr. I have calculated the rates of fluid requirements. If she was not dehydrated she would have required 45mls/hr. If she was 5% dehydrated it would have worked out at 60mls/hr and 10% dehydration works out at 80mls/hr. I would therefore be surprised if those volumes of fluid could have produced gross cerebral oedema causing coning." (Emphasis added)	
31.07.2000	Final Report of Eugene Fee and Dr. Trevor Anderson, 'Report re: The Review of Lucy Crawford's Case', the purpose of which is stated as to try and establish: *"(a) [Whether] There is any connection between our activities and actions and … Lucy's condition* *(b) Whether or not there was any omission … which may have influenced … Lucy's condition* *(c) Whether or not there are any features of … care in this case which may suggest the need for change … within the Paediatric Department or wider hospital generally"* *(Emphasis added)* The Review stated: *"Dr. Quinn is of the view that the intravenous solution used and the total volume of fluid intake [mixture of oral fluids and IV of solution 18], when spread over the 7½ hour period, would be within the accepted range and has expressed his surprise if those volumes of fluid could have produced gross cerebral oedema causing coning.* *There is no written prescription to define the intended volume. There was some confusion between the Consultant, Senior House Officer and Nurses concerned in relation to the intended volume of fluid to be given intravenously. There is a discrepancy in the running total of the intravenous infusion of solution 18 for the last 2 hours. There is no records of the actual volume of normal saline given when commenced on a free flowing basis."* (Emphasis added) The recommendations included: *"(a) the need for prescribed orders to be clearly documented and signed by the prescriber* *(b) the importance for standard protocols to be readily available in the ward against which treatment can be compared"* (Emphasis added)	Ref: 030-007-012 Ref: 036a-053-123 Ref: 036a-053-125 Ref: 036a-053-127
10.08.2000	Clinical Paediatric Audit meeting at RBHSC, chaired by Dr Robert Taylor, at which Lucy's case was presented and discussed	Ref: 319-023-004 to 319-023-005
14.09.2000	Letter from Dr. Jim Kelly to Patricia Hamilton (Secretary, Royal College of Paediatrics & Child Health) seeking assistance in handling *"an issue that concerns professional conduct and competency"*. Background information was given, concluding with: *"I did not feel that a precautionary suspension [of Dr. Jarlath O'Donohoe] was required at this stage, and this action was supported by the Senior Medical and Nursing staff within Paediatrics. I did however feel the nature of the concerns raised, both in terms of non-fulfilment of contract and the clinical mismanagement of individual cases, required an outside paediatric opinion be sought."*	Ref: 036a-009-016
22.09.2000	Letter from Mr. Crawford to Betty O'Rawe (Director of Corporate Affairs, Sperrin Lakeland Health & Social Trust) advising that he wished to invoke the Formal Complaints Procedure concerning: *"the inadequate and poor quality care provided to my daughter Lucy following her admission to the Erne Hospital on Wednesday 12 April 2000 and prior to her transfer to Royal Belfast Hospital for Sick Children on 13 April 2000"*	Ref: 072-004-179
October 2000	Department published "Confidence in the Future – for Patients and for Doctors", a consultation document dealing with the prevention, recognition and management of poor performance by doctors.	Ref: WS-062/1, p.4
November 2000	Northern Ireland Defect and Investigation Centre became the Northern Ireland Adverse Incident Centre	Ref: WS-062/1, p.4
12.12.2000	SAC (General Surgery) meeting held on 12.12.00 and discussion on paediatric surgery & concern from Altnagelvin on maintaining surgical skills with inadequate volume	Ref: 320-120-001

Date	Events (after Lucy's death)	Reference
2001	GMC 'Good Medical Practice' issued	Ref: 314-014-001
January 2001	Royal Liverpool Children's Inquiry Report published	Ref: WS-062/1, p.4
28.02.2001	CMAC records the CMO saying *"for some time the Department had been considering how to take forward the quality and agenda in Northern Ireland. It is anticipated that a paper on clinical quality and clinical governance be issued within the next few weeks for consultation"*.	Ref: 320-008-002
08.03.2001	Circulation of Priorities for Action 2001/2002 to the Health and Personal Social Services	Ref: WS-066/1, p.111
31.03.2001	Clinical Review Lesson of the Week published in the BMJ: 'Acute hyponatraemia in children admitted to hospital: retrospective analysis of factors contributing to its development and resolution'; Halberthal, Halperin & Bohn: *"Do not infuse a hypotonic solution if the plasma sodium concentration is less than 138 mmol/L"*	Ref: 006-002-242
11.04.2001	DHSSPS(NI) publishes Consultation Paper: 'Best Practice – Best Care: A framework for setting standards, delivering services and improving monitoring and regulation in the HPSS'. BPBC proposed: • Setting standards to improve services and practice • Ensuring local accountability in the delivery of healthcare • Improving the monitoring and regulation of healthcare.	Ref: WS-062/1, p.4
April 2001	Department of Health in England produces *"Building a Safer NHS for Patients"*	
April 2001	Circular HSS (TC8) 3/01 introduces appraisal of consultant staff in Northern Ireland	Ref: 317-030-001
April 2001	Paper presented to the Association of Surgeons of Great Britain and Ireland, in Birmingham on: 'Peri-operative fluid and electrolyte management: a survey of consultant surgeons in the UK'	
26.04.2001	Royal College of Paediatrics & Child Health Review by Dr. Moira Stewart on 4 clinical cases involving Dr. Jarlath O'Donohoe. The section on Lucy stated that: (i) it was based upon: (a) an examination of the nursing and medical records from the Erne Hospital; (b) the post mortem report; (c) the medical report from Dr. Murray Quinn (ii) the volume of fluids given was not excessive (iii) there was a *"debate"* about the most appropriate fluid to use (ie for 'replacement' and for 'maintenance') The Review on Lucy concluded: *"This little girl was admitted to the Erne Hospital in April 2000 and had a respiratory arrest 8 hours later, from which she never regained consciousness. Subsequent results indicate that she had gastroenteritis due to rotavirus (she may also have had bronchopneumonia). Initial investigations indicate that she was quite ill on admission, with a degree of circulatory failure. There was a delay in implementing fluid resuscitation and there are deficiencies in the prescription and recording of volumes of fluids administered. The subsequent events which occurred about 8 hours after admission were likely to have been preterminal and on the basis of cerebral oedema and coning."* (Emphasis added)	Ref: 032-025-052 Ref: 032-025-052
27.04.2001	Letter before action from Murnaghan & Fee (Solicitors for the Crawfords) to Sperrin Lakeland Health & Social Care Trust in respect of Lucy's death	Ref: 072-002-047

SCHEDULE 5: Raychel's death at the RBHSC

Date	Events (after Raychel's death)	Reference
10.06.2001	**Raychel's death**	

Date	Events (after Raychel's death)	Reference
12.06.2001	Dr Raymond Fulton (then Medical Director of Altnagelvin Hospitals Health & Social Services Trust) set up a 'Critical Incident Enquiry' involving all relevant clinical staff to establish the clinical facts	Ref: 006-002-235 & Ref: 006-002-238
13.06.2001	DHSS, 'An Organisation with a Memory': Report of an Expert Group on Learning from Adverse Incidents in the NHS, chaired by the CMO: *"There is evidence that 'safety cultures', where open reporting and balanced analysis are encouraged in principle and by example, can have a positive and quantifiable impact on the performance of organisations. 'Blame cultures' on the other hand can encourage people to* ***cover up errors for fear of retribution and act against the identification of the true causes of failure, because they focus heavily on individual actions and largely ignore the role of underlying systems****. The culture of the NHS still errs too much towards the latter;* *Reporting systems are vital in providing a core of sound, representative information on which to base analysis and recommendations. Experience in other sectors demonstrates the value of* ***systematic approaches to recording and reporting adverse events and the merits of quarrying information on 'near misses' as well as events which actually result in harm****. The NHS does not compare well with best practice in either of these areas."*	
14.06.2001	Dr. Nesbitt (Clinical Director for Anaesthetics at Altnagelvin) wrote to Dr Raymond Fulton (Medical Director) advising that he had contacted several hospitals (including the Royal) on their use of solution no.18 and that the Royal had changed its practice about 6 months ago 'following several deaths involving No.18 solution' *"To summarise: Altnagelvin Hospital has followed what is widespread and accepted policy of using No.18 solution for postoperative fluids. There is evidence to show that this policy is potentially unsafe in certain children who have undergone a surgical procedure. The Children's Hospital has ceased to use it and Craigavon is trying to effect a change in this direction"*	Ref: 022-102-317
18.06.2001	Meeting of Medical Directors of Trusts. Dr. Raymond Fulton raises Raychel's death under 'Any other business' – agreement a need for regional guidelines.	Ref: 006-002-238
21.06.2001	Dr. J. Kelly (Medical Director, Sperrin Lakeland Trust) writes to all Consultant Paediatricians and Staff Grades informing them of the death of Raychel Ferguson, and seeking a review of its use of Solution 18.	Ref: 036a-055-141
22.06.2001	CMO states she was informed of Raychel's death by Dr Ian Carson shortly after the meeting of 18.06.2001.	Ref: WS-075/1, p.2 & Ref: 006-002-238
	Dr. Fulton telephones and speaks directly with CMO who suggests that the Clinical Resource Efficiency Support Team (CREST) might be involved in the development of guidance	Ref: 075-002-005 & Ref: 006-002-238 & Ref: 023-021-048
26.06.2001	Meeting of 'Sick Children Liaison Group', attended by amongst others: Dr Robert Taylor (Royal), Dr Miriam McCarthy (for CMO), Dr Bell (Craigavon) and Dr Morrow (Altnagelvin). The minutes of the meeting show that Dr Robert Taylor: *"presented several papers which indicated the potential problems with the use of hypotonic fluids in children"* and: *"Work to take place on agreed guidelines from the Department of Health on this subject"*	Ref: WS-008/1
27.06.2001	Letter from Dr. Jim Kelly to Dr. William McConnell (Director of Public Health, Western Health & Social Services Board) enclosing the Report from 'Royal College of Paediatricians' in respect of Dr. Jarlath O'Donohoe's competence together with: (i) Dr. Moira Stewart's comments; and (ii) notes of a follow-up meeting and questions. The letter advised that the information had been shared with the Chief Executive of the Trust.	Ref: 036a-028-069
July 2001	'Learning from Bristol: the Report of the Public Inquiry into Children's Heart Surgery at the Bristol Royal Infirmary (1984-1995)'	Ref: WS-062/1, p.4
July 2001	National Patient Safety Agency formed	Ref: WS-062/1, p.6

Date	Events (after Raychel's death)	Reference
02.07.2001	Meeting of Directors of Public Health/DHSSPS Dr. William McConnell advises meeting (attended by CMO) of a recent death in Altnagelvin Hospital of a child due to hyponatraemia caused by fluid imbalance [Raychel Ferguson]. The minutes record *"Current evidence shows that certain fluids are used incorrectly post operatively. It was agreed that guidelines should be issued to all units"* This was raised by Dr. William McConnell under aob and not by CMO	Ref: 075-081-327 Ref: 320-080-005
05.07.2001	Letter from Dr. William McConnell (WHSSB – Director of Public Health) to Dr. Fulton confirming that he has notified the CMO of Raychel's death and that he will write to each of the Directors of Public Health advising them of Raychel's death *"who would then take responsibility for drawing the issue to the attention of any relevant paediatric settings within their respective Boards"*	Ref: 022-094-302 See also File 6 1B
05.07.2001	Letter from Dr. William McConnell (WHSSB – Director of Public Health) to the Directors of Public Health in the various Boards referring to Raychel's death and informing them: *"It appears that the use of hypotonic saline is still common practice in a number of paediatric units although there has been information around for a few years suggesting that this does present risks to a very small number of children in the acute perioperative period … while the information may be known by anaesthetic staff, there has not necessarily been discussion regarding change between anaesthetists, surgeons and paediatricians"*	Ref: 022-094-303
26.07.2001	Stella Burnside (Chief Executive of Altnagelvin Hospital) speaks to CMO advocating the development of regional guidance: *"I believe that this is a regional, as opposed to local hospital issue, and would emphasise the need for a critical review of evidence. I would be extremely grateful if you would ensure that the whole of the medical fraternity learned of the shared lesson"*	Ref: 022-093-301
27.07.2001	Reply from CMO to Stella Burnside stating that her understanding was that the Directors of Public Health for each of the Boards were to deal with any guidelines to be issued at a local level and that she would personally oversee the production of guidelines	Ref: WS-075/1, p.4
30.07.2001	E-mail from Dr. Ian Carson (Consultant Anaesthetist at the Royal & Trust Medical Director & Deputy Chief Executive) to the CMO and copied to Dr. Robert Taylor and Dr Raymond Fulton enclosing the Notice of 12th June 2001 and stating: *"Please find attached document … drawn up by Dr Bob Taylor and his colleagues. It reflects current 'opinion' among experts in the management of these children, however it does not yet command full support amongst paediatricians …* *The problem today of 'dilutional hyponatraemia' is well recognised (see reference to BMJ Editorial) …* *There was also a previous death approx. 6 yrs ago in a child from the Mid-Ulster. [Adam] Bob Taylor thinks there have been 5 – 6 deaths over a 10 year period of children with seizures, but he has not seen any Cochrane reviews on the subject.* *This might be a subject that would be worth Clinical Research Efficiency Support Team (CREST) looking at. There is obviously a need to get better agreement between anaesthetists/intensivists and paediatricians.* *I also believe that there are some laboratory and nursing issues in relation to blood sampling and volumes of blood necessary for regular sodium analysis"* *(Emphasis added)*	Ref: 021-056-135
August 2001	DHSS & NPSA, 'Doing Less Harm; Improving the Safety and Quality of Care through Reporting, Analysing and Learning from Adverse Incidents'	
14.08.2001	Dr Paul Darragh meets with Dr Miriam McCarthy, informs her of Raychel's death and asks her to convene a working group to produce guidance on the prevention of hyponatraemia in children	Ref: WS-080/1, p.2
21.08.2001	Letter from Dr. Paul Darragh (Deputy Chief Medical Officer) to 'colleagues' referring to *"increasing evidence that Acute Hyponatraemia is emerging as a significant clinical problem in sick children receiving IV fluids"*, inviting them to a meeting on 26th September 2001 in respect of the Department to:	Ref: 007-050-099

Date	Events (after Raychel's death)	Reference
	"convene a group to consider how best practice could be brought to bear on the problem and to explore whether further advice needs to be issued by the DHSS&PS at this time to the profession."	
24.08.2001	Letter sent to Chief Executives of HSS Boards and Trusts re: Priorities for Action- Monitoring and Accountability, stating that the Department of Health, Social Services & Public Safety will now monitor progress towards the achievement of Priorities for Action on a quarterly basis.	Ref: WS-066/1, p.158
03.09.2001	CMO chairs meeting of Directors of Public Health /DHSSPS Informs the group that Dr Paul Darragh is setting up a working group to consider hyponatraemia in children and: *"The Group will make recommendations on the fluid balance in children. These will be presented to SAC Surgery, SAC Paediatrics and SAC Anaesthetics"*	Ref: 075-082-329
18.09.2001	E-mail from Dr. Robert Taylor to Dr. Paul Darragh in respect of the meeting on 26th September 2001 and providing a draft power point presentation 'Hyponatraemia in Children – Teaching Aid'. The presentation included 'Incidence of hyponatraemia at RBHSC' recording admissions and deaths in respect of hyponatraemia and showing a death in 1997 and one in 2001.	Ref: 007-051-100
25.09.2001	Dr Robert Taylor sends the 'Committee on Safety of Medicines: Medical Control Agency' a 'Suspected Adverse Drug Reactions' form in relation to solution 0.18% NaCl/4% and Raychel's brain death following seizures	Ref: WS-008/1
26.09.2001	Meeting on 'Acute Hyponatraemia in Children', chaired by Dr. Paul Darragh and attended by: Dr. Robert Taylor (Royal), Dr. Lowry (Craigavon), Dr. Nesbitt (Altnagelvin), Mr. Marshall (Erne), Mr. McCallion (Royal), Dr. Kennedy (Northern Health & SS Board), Dr. Clodagh Loughrey (Belfast City Hospital), Ms. McElkerney (Ulster Hospital), Dr. Peter Crean (Royal), Dr. Miriam McCarthy, Dr. Mark (Department) The notes of the meeting record that Dr. Robert Taylor *"informed the meeting about the background, incidence of cases seen in RBHSC and patients who are particularly at risk of hyponatraemia". (Emphasis added)* Dr. Robert Taylor also stated: *"This is a problem that has been present for many years. Fluid replacement in children is complex and while guidelines are in place for acute management, chronic management is not well covered. Patients at risk include children post surgery and those with acute reactions to a number of stressors. The problem is that of water intoxication rather than Na depletion. Problems can arise with incorrect weighing of children" (*Emphasis added) The meeting decided: *"that a small group should undertake the drafting of guidelines and audit protocol"*	Ref: 007-048-094
27.09.2001	E-mail from Dr. Robert Taylor to Anne Safford (Secretary to Paul Darragh Deputy Chief Medical Officer) advising that he had completed a 'yellow card' hazard to CSM [in respect of .18%NaCl/4%glucose] and voicing his concerns *"about the move to Normal saline as a recommended fluid, even in the post op child"* and stating his belief that *"the recommendation should remain 'infuse at least 0.45%NaCl in 2.5% glucose solution'"* He set out similar concerns in a letter to Dr. Jarlath McAloon around the same date.	Ref: 007-043-088
01.10.2001	Letter from Dr. Maurice Savage to Dr. Paul Darragh (Deputy Chief Medical Officer) referring to the Working Group drawing up guidelines for the use of intravenous fluids in children, pointing out: *"I am concerned that someone in my position only hears about such a group on the 'grapevine'"* and seeking reassurance that *"such guidelines were not an isolated recommendation in Northern Ireland but were the subject of scrutiny by the appropriate committee of the Royal College of Paediatrics and Child Health."* (Emphasis added)	Ref: 007-042-087
October	Safety review of hypotonic saline is undertaken by Dr. Katherine Cheng	Ref: Hypotonic saline

Date	Events (after Raychel's death)	Reference
2001		Paediatric safety review
01.10.2001	Dr. Robert Taylor writes to Dr. Jarlath McAloon enclosing draft recommendations on Hyponatraemia in Children	Ref: WS-059/2 p.16
01.10.2001	Letter from Dr. Maurice Savage to Dr. Paul Darragh (Deputy Chief Medical Officer) referring to the Working Group drawing up guidelines for the use of intravenous fluids in children, pointing out: *"I am concerned that someone in my position only hears about such a group on the 'grapevine'"* and seeking reassurance that *"such guidelines were not an isolated recommendation in Northern Ireland but were the subject of scrutiny by the appropriate committee of the Royal College of Paediatrics and Child Health."* (Emphasis added)	Ref: 007-042-087
02.10.2001	Meeting of Speciality Advisory Committee Anaesthetics chaired by Paul Darragh The minutes record that Dr. Darragh advised the meeting of a draft paper prepared as guidance in respect of prevention of hyponatraemia in children and asked for comments to be sent to Dr McCarthy	Ref: 075-080-322 & Ref: 075-080-322
03.10.2001	E-mail from Dr. Robert Taylor to Dr. Miriam McCarthy providing her with feedback from Speciality Advisory Committee Anaesthetics ("SAC"), Alder Hey and Toronto Sick Kids: *"It appears that the common factor is the use of Balanced Salt (Hartmanns or N Saline) intraoperative and 0.45%NaCl, with either 2.5% or 5% glucose … Alder Hey as you can see do not stock 0.18%NaCl/4%glucose at all"* (Emphasis added)	Ref: 007-041-082
10.10.2001	Meeting of sub-group to draft Northern Ireland hyponatraemia guidelines (established following the meeting on 26.09.2001) Agreed that further communication would be via e-mail	Ref: 007-038-072
17.10.2001	Letter from Dr. Cheng at the Medicines Control Agency to Dr. Robert Taylor seeking further information in respect of his request for a 'Hazard Notice' for 0.18%NaCl/4%glucose	Ref: 012-071f-413
22.10.2001	E-mail from Clodagh Loughrey to Dr. Miriam McCarthy on the draft hyponatraemia guidelines, querying: *"Should we be more specific about what are 'appropriate fluids'? Or at least 'suggested replacement fluids'?"*	Ref: 007-036-068
23.10.2001	Letter from Dr. Robert Taylor to Dr. Cheng replying to her letter of 17th October 2001 and providing summary details on Raychel's case: *"I am not in a position to supply a post-mortem result as it is a Coroners case … I have copied this response to both these men [Coroner and the Neuropathologist who conducted the post-mortem.* *I am also conducting an audit of all infants and children admitted to the PICU with hyponatraemia. My initial results indicate at least 2 other deaths attributable to the use of 0.18NaCl/4%Glucose"*	Ref: 007-033-060
24.10.2001	Dr. Robert Taylor writes to the Coroner enclosing Medicine Control Agency correspondence and seeking a copy of the Post-Mortem Report	Ref: 012-071d-411
25.10.2001	E-mail from Dr. Robert Taylor to Dr. McCarthy enclosing correspondence from the Medicines Control Agency.	Ref: 007-032-059
30.10.2001	Meeting of the Specialist Advisory Committee (SAC) – Paediatrics The minutes record that it was attended by CMO and that Dr McCarthy summarised the guidelines on the 'Prevention of Hyponatraemia in children receiving intravenous fluids' that were to be published soon	Ref: 075-076-292 & Ref: 075-076-287
31.10.2001	Coroner writes to Dr. Robert Taylor seeking to understand if his concerns relate to a death of a	Ref: 012-071c-410

Date	Events (after Raychel's death)	Reference
	child that has been reported to him	
November 2001	Working Group on Paediatric Medicines of the Committee on Safety of Medicines conclude that hyponatraemia in association with hypotonic intravenous fluids administration related more to clinical practice and advised there should be no changes to product information.	Ref: Hypotonic saline Paediatric safety review.
01.11.2001	Dr. Robert Taylor writes to the Coroner and states: *"As you will remember I also had a child's death related to this type of fluid and have requested that the MCA consider issuing a "hazard notice" to prevent further deaths related to this fluid"*	Ref: 098-048-185
05.11.2001	Meeting of the Directors of Public Health/DHSSPS Meeting attended by CMO. Dr McCarthy introduced a draft paper on prevention of hyponatraemia in children, which was discussed. The benefit of having it endorsed by CREST was considered as was having it endorsed by SAC - Anaesthetics and Paediatrics	Ref: 075-083-333
08.11.2001	Dr. Miriam McCarthy attends a meeting of CREST sub group on hyponatraemia at Castle Buildings to advise of working group on hyponatraemia guidelines in respect of children, the minutes of which record at item 5 'Prevention of Hyponatraemia in Children Receiving Intravenous Fluids': "*Dr. Stewart reported that the Department had approached CREST regarding the dissemination and 'kite marking' of guidelines on the Prevention of Hyponatraemia in Children Receiving Intravenous Fluids. He introduced Dr. McCarthy, DHSSPS, who stated that the problem had come to the attention of the Department through* ***clinicians, who reported an increase in the condition*** *and felt in need of urgent guidance"* (Emphasis added) CREST agrees to set up a small working group to take matter forward	Ref: 075-066-213 & Ref: 075-066-210
14.11.2001	Dr. Fulton issues memorandum to Mrs. Burnside informing her that he has advised Dr. Nesbitt to challenge the 'Choice of Fluid' section of the draft 'Intravenous Fluids in Children' guidelines as "*Geoff says it is a fudge*"	Ref: 021-055-134
20.11.2001	E-mail from Dr. Robert Taylor to Elizabeth Garrett (Secretary to Dr. Miriam McCarthy) commenting on the final draft of the hyponatraemia guidelines: *"I am a little disappointed that you have not come out with a 'typical' or 'suitable' fluid for children …* *I will continue to pursue a 'hazard notice' for 0.18&MaCl/4%glucose through the CSM"*	Ref: 007-029-056
21.11.2001	Letter from Dr. Bell (Consultant Paediatrician, Ulster Hospital) to Dr. Miriam McCarthy commenting on the draft hyponatraemia guidelines: *"I had very much hoped for a clearer statement from the Department of Health to bring uniform consistent practice through all Paediatric Units in Northern Ireland, so that when SHOs rotate through posts the management will not vary.* *I think it is important to include a statement to emphasize the importance of not giving modified saline solutions before serum sodium is known and in those instances fluids are needed immediately that normal saline or colloid should be given."* *(Emphasis added)*	Ref: 007-027-050
26.11.2001	Letter from Medicines Control Agency to Dr. Robert Taylor advising him that they are satisfied that there should be no amendments to product information re 0.18% NaCl but suggest that electrolyte imbalance is a risk with all iv solutions and careful monitoring is crucial.	Ref: 007-017-034
26.11.2001	Meeting of the Paediatric Anaesthetic Group presenting and discussing the final draft of the Prevention of Hyponatraemia in Children Receiving Intravenous Fluids	Ref: WS-038/1 p.14
30.11.2001	The Coroner writes to Dr. Herron seeking to discover *"whether there are any parallels between the death of Adam Strain and Raychel Ferguson"*	Ref: 098-053-192
30.11.2001	Dr. Robert Taylor writes to Department to advise that he has received a letter from Medicines	Ref: 007-032-059

Date	Events (after Raychel's death)	Reference
	Control Agency dated 26th November 2001 and summarises its content ie that there should be no amendments to product information re 0.18% NaCl but suggest that electrolyte imbalance is a risk with all iv solutions and careful monitoring is crucial.	
30.11.2001	Dr. Robert Taylor's letter to Medicines Control Agency. He states that he has information that at least 2 other deaths were attributable to 0.18% NaCL	Ref: 007-033-060
30.11.2001	E-mail from Clodagh Loughrey to Elizabeth Garrett (Secretary to Dr. Miriam McCarthy) commenting on the draft hyponatraemia guidelines: *"I am disappointed that we are not actively discouraging the use of hyptonic fluids in replacement fluids … since I believe this was a major factor (if not the major) factor in the demise of the child in Altnagelvin [ie Raychel] … I will give in gracefully, as long as my thoughts are on record"* The e-mail went on to ask: *"Were you aware of the death of a 4 year-old child in what sound like very similar circumstances in Northern Ireland in 1996? [ie Adam] I was speaking to the Coroner about it today and he is to send me a copy of his report in that case. Let me know if you'd be interested in seeing it. Perhaps you're already aware of it."* CMO 'cannot recall' whether or not Dr McCarthy brought this e-mail to her attention at the time	Ref: 007-025-048 Ref: WS-075/1, p.2
11.12.2001	Meeting of the Special Advisory Committee on General Surgery – CMO present. Guidelines commended – request to forward same to A&E Departments. The minutes record that: *"It was also felt that the guidance could be made more explicit in general and particularly in the use of 1/5 normal saline. It was also felt that the guidance should state who should prescribe fluids as well as monitor the patient"*	Ref: 075-084-338
13.12.2001 **14.12.2001**	Coroner telephones Dr McCarthy to advise the CMO of Adam's death	Ref: 006-056-440
14.12.2001	E-mail from Dr. Miriam McCarthy to Dr. Edward Sumner (cc: the Coroner) informing him that guidelines were being drafted on the prevention of hyponatraemia in children receiving IV fluids following on from an incident in Altnagelvin Hospital (Raychel) and seeking his advice and guidance on the issues being debated: (i) whether specific fluid choices should be recommended bearing in mind that there is no right and wrong and (ii) the need to stress that any fluid has the capacity to cause hyponatraemia in a sick child	Ref: 007-016-032
17.12.2001	E-mail from Dr. Edward Sumner to Dr. Miriam McCarthy's e-mail of 14th December 2001 acknowledging that it is a *"tricky matter"* and stating: (i) intraoperatively, patients do not need dextrose though it should be measured routinely (ii) Hartmann's is a very suitable maintenance fluid and should be given strictly in line with the guidelines – ie 10ml per kilo for the first hour and subsequent hours 8 per kilo (iii) colloid loss should be replaced with colloid and gastrointestinal losses with saline (iv) in a complex case sodium, potassium and haematocrit should be measured regularly throughout the case (v) postoperatively fluid should be restricted for the first 24-48 hours because of inappropriate ADH [anti-diuretic hormone] associated with surgical stress. CMO states that 'Dr McCarthy passed a copy of the report on to me, although I cannot now be sure of the precise date'.	Ref: 007-016-032 Ref: WS-075/1, p.3
20.12.2001	E-mail from Dr. Miriam McCarthy (at 09.28am) to amongst others: (i) Dr. John Jenkins; (ii) Dr. Peter Crean; (iii) Clodagh Loughrey; (iv) Dr. Robert Taylor; (v) Dr. Geoff Nesbitt stating: *"Following SAC surgery and the medical directors meeting last week I have had feedback that we should include some reference to .18% saline and I have added one brief statement in under 'choice of fluids' and would be happy to have your views"*	Ref: 007-013-028
20.12.2001	E-mail from Dr. Peter Crean (at 11.59) to Dr. Miriam McCarthy stating:	Ref: 007-014-029

Date	Events (after Raychel's death)	Reference
	"… you have now added specific iv fluids. Unfortunately there is not really any evidence to suggest that one solution is more or less harmful than another … *I still feel that the most important aspect of these recommendations is the monitoring of fluid administration. Also any fluid with a sodium content of less than 140mmol/l is potentially harmful"*	
20.12.2001	E-mail from Clodagh Loughrey (at 13.27) to Dr. Miriam McCarthy providing her comments on the proposed hyponatraemia 'wall chart' and 'guidelines': *"How would you feel about expanding the third line to read 'the risk of hyponatraemia may be increased in a child receiving 4% dextrose/0.18% saline <u>as a replacement fluid</u>' … Would it help if I spoke directly to the individual(s) who doesn't agree with me on the safe sodium content of replacement fluids? I feel so strongly about this being the essence of the problem that I'd like you to remove my name from any association with the guidelines if we don't make any direct reference to the sodium content of replacement fluids. I'd be content with the above as a minimum"* *(Emphasis added)*	Ref: 007-013-027
24.12.2001	Dr Nesbitt emails Dr McCarthy commenting on draft guidelines and his dismay that there is no reference to sol. No. 18	Ref: 007-003-005
10.01.2002	Dr. McCarthy, in an e-mail to the Working Group stated: *"There is not a sound evidence base to suggest that [Solution No.18] carries an intrinsic risk in itself. When CSM commented recently they emphasised the risk of hyponatraemia with any fluid and did not feel it appropriate to amend product information."*	Ref: 007-008-014
24.01.2002	Dr. Nesbitt emails Dr. Miriam McCarthy expressing disappointment as to the *"plan to drop the reference to Solution 18"*	Ref: 007-003-005
25.01.2002	Therese Brown provides the following statements to Mr. Leckey, the Coroner: Drs. McCord, Gund, Trainor, Morrison, Nesbitt, Johnston, and Nurses Millar, Rice and Noble	Ref: 022-054-151
06.02.2002	Hospital Service Sub-Committee of CMAC where it is recorded: *"The Committee emphasised that the introduction of clinical and social care governance needs to be taken forward urgently"*	Ref: 320-022-003
07.02.2002	Letter from Dr. Jim Kelly to Dr. Patricia Hamilton (Secretary, Royal College of Paediatrics & Child Health) referring to their previous contact in 2000 and a Review of case notes carried out by Dr. Moira Stewart and explaining: *"The outcome from the review was that <u>they contained a combination of systems failures, some failure to follow best practice guidelines but nothing of sufficient concern that would warrant referral to GMC</u> or direct intervention such as temporary suspension. Initially all of the incidents and concerns were raised by a single individual who had also introduced a claim of harassment against this consultant and it has always been difficult to separate out the components that were personality clash and those that were genuine professional competency concerns."* *(Emphasis added)* The letter went on to say that they had been unable to recruit an additional paediatrician and that: *"There have been ongoing concerns in relation to the performance of Dr. O'Donohoe … involve a wider range of cases and some of the concerns have been endorsed by other staff …while <u>none of the clinical team views the matter as one warranting referral to the GMC</u>, there is <u>clearly a need to define the level of underperformance if any</u>."* *(Emphasis added)* The letter concluded with a *"formal request"* for *"assistance with providing an <u>external professional competency review of the practice of Dr. O'Donohoe</u> … [to] involve a visiting paediatrician reviewing aspects of workload, clinical management of patients including outcomes and performance within the team."* *(Emphasis added)*	Ref: 036a-129-273 & Ref: 032-020-032
25.02.2002	CMO/Directors of Public Health meeting	Ref: WS-081/1, p.3
27.02.2002	Dr McCarthy reports to CREST sub group meeting on the 'Management of Hyponatraemia in the Adult Patient' on the outcome of the work on a small multi-professional group dealing with	Ref: 075-073-276

Date	Events (after Raychel's death)	Reference
	'Prevention of Hyponatraemia in Children Receiving Intravenous Fluids'. She referred to the fact that: *"some months ago, the Department had been approached by Paediatricians, expressing concerns over an increase in the condition of Hyponatraemia and felt in need of urgent guidance"* She stated that an A2 wall chart targeted at junior staff and non-specialists would be published shortly, which was intended to raise awareness of the problem with the recommendation that each Unit should draw up its own protocol, using the guidelines as advice	
March 2002	Departmental Board adopt common model of risk management for Dept and all associated bodies- circular HSS (PPM) 3/2002 – Corporate Governance and the Statement of Internal Control and 6/2002 – Risk Management	Ref: WS-062/1, p.5
18.03.2002	Letter from Patricia Hamilton (Secretary Royal College of Paediatrics and Child Health to Dr. Jim Kelly (Medical Director Sperrin Lakeland Health & Social Care Trust) referring to a request for assistance *"with providing an External Professional Competency Review of Dr. O'Donohoe"*. The letter advised that 2 paediatricians would be involved (as is the practice) and that Dr. Moira Stewart had been chosen as one as she *"knows the local situation and has been involved in some of the casework before"*. The letter also stated: *"Dr. Stewart feels that she is able to continue to provide a balanced and independent view, despite having been previously involved. Please let me know if this is acceptable to the Trust"*	Ref: 032-019-030
25.03.2002	Letter from CMO to Trusts and Consultants (Paediatricians, Surgeons, Neurosurgeons, Anaesthetists/Intensivists, Plastic Surgery/Burns, A&E Medicine, Pathologists) informing them of publication of Guidance on the Prevention of Hyponatraemia (and enclosing a copy of it). She noted that: "*Hyponatraemia can be extremely serious and has in the past few years been responsible for <u>two deaths</u> among children in Northern Ireland*" (Emphasis added). Further notes that the Guidance will take the form of *"an A2 sized poster and I ask you to ensure that the posters are prominently displayed in all units that may accommodate children"*	Ref: 021-053-115
26.03.2002	Dr. Henrietta Campbell writes to all Medical Directors or Acute Trusts enclosing posters of Guidance requesting that they be prominently displayed in clinical rooms	Ref: 007-002-003
29.03.2002	Donna Scott, Solicitor, writes to Coroner setting out the Altnagelvin Trust's position in relation to the Report of Dr. Sumner	Ref: 160-163-001
April 2002	CMO Update – CMO included an article on Hyponatraemia – referring to the guidelines which were being issued and stressing the need for rigorous monitoring of fluid balance	Ref: 075-085-346
24.04.2002	CREST sub group meeting on 'Management of Hyponatraemia in the Adult Patient', which discussed papers produced on hyponatraemia and the way forward was agreed	Ref: 075-074-279
May 2002	Report published of responses to the Best Practice, Best Care consultation	
01.05.2002	Letter from Dr Nesbitt to the CMO in respect of Adam's death in the light of Raychel's death: *"I am interested to know if any such guidance was issued by the Department of Health following the death of a child in the Belfast Hospital for Sick Children which occurred some 5 years ago and whose death the Belfast Coroner investigated. I was unaware of this case and am at a loss to explain why.* *I would be grateful if you would furnish me with any details of that particular case for I believe that **<u>questions will be asked as to why we did not learn from what appears to have been a similar event</u>**"* (Emphasis added)	Ref: 006-045-427
09.05.2002	CREST meeting Sub group on adult hyponatraemia reports: *"A worrying scenario which had come to light during deliberations, was that **<u>medical students were no</u>***	Ref: 075-067-223

Date	Events (after Raychel's death)	Reference
	longer taught pharmacology *and* ***nurses taught very little about fluid balance****. Dr. Russell said these issues needed to be addressed but were outside the remit of the group"* (Emphasis added)	
10.05.2002	CMO replies to Dr. Nesbitt's letter of 1st May 2002 that she was unaware of *"a Coroner's case five years ago in which the cause of death of a child was reported to be due to hyponatraemia. This Department was not made aware of the case [Adam] at the time either by the Royal Victoria Hospital or the Coroner. We only became aware of that particular case when we began the work of developing guidelines following the death at Altnagelvin"* *(Emphasis added)*	Ref: 006-046-428
June 2002	Northern Ireland Assembly Executive launches the Review of Public Administration with a view to putting in place accountable and effective arrangements for public service delivery.	
21.06.2002	CREST sub group meeting on 'Management of Hyponatraemia in the Adult Patient', The draft guidelines identify, inter alia, children as being at risk	Ref: 075-075-282
21.06.2002	'Corporate Governance: Statement of Internal Control', issued to all Chief Executives of HSS Boards & Trusts.	HSS (PPM) 3/2002 Ref: WS-075/1, p.33
July 2002	DHSSPS(NI) announced, following on from the proposals in 'Best Practice – Best Care, its decisions on the new arrangements for clinical governance focusing on inter alia: (i) setting clear standards; (ii) programmes of continuous professional development strengthened by enhanced arrangements for professional regulation; (iii) systems for monitoring the delivery of services. A draft circular on 'clinical and social care governance' for comment was enclosed	HSS (PPM) 10/2002, p.2
05.07.2002	NIAO publish Report: 'Compensation Payments for Clinical Negligence' which stated in relation to 'risk management': *"It is disappointing that action in response to the survey [Asurvey of Risk Management in the HPSS Organisations] has been delayed, given the high expectations of the Department … A permissive approach to the implementation of good risk management has not brought the results that are required. We would, therefore, expect the Department to be able to provide positive assistance of substantial progress in risk management within HPSS bodies, by 2003 at the latest."* Ref: 127-004-081 *"Providers suggested that the existence of clinical incident reporting systems was no guarantee that all appropriate incidents were reported. Also, the current arrangements had no provision for reports to be reported to a central body"* Ref: 127-004-083	Ref: 127-003-001
07.08.2002	Letter of Dr. Andrew Boon (Consultant Paediatrician) to Dr. Jim Kelly enclosing the Royal College of Paediatrics & Child Health Review on Jarlath O'Donohoe carried out jointly by Dr. Andrew Boon and Dr. Moira Stewart (Consultant Paediatrician/Senior Lecturer in Child Health, Queen's University Belfast). The Review stated: (i) *"During the interview it became clear that there appears to be a gap between Dr. O'Donohoe's medical knowledge and his ability to put this into practice"* (ii) *"Dr. Kirby recounted how his 10 year old daughter had been under the care of Dr. O'Donohoe … Overall he was not impressed by Dr. O'Donohoe's clinical ability"* (iii) *"The prescription for the fluid therapy for LC [Lucy] was very poorly documented and it was not at all clear what fluid regime was being requested for this girl. With the benefit of hindsight there seems to be little doubt that this girl died from unrecognised hyponatraemia although at that time this was not so well recognised as at present"* (iv) *In summary it was felt that there is some substance to the concerns raised in the cases cited by Dr. Ashgar and these are compounded by Dr. O'Donohoe's style of working and personality"* *(Emphasis added)*	Ref: 035-021-073 & Ref: 032-006-007
September 2002	Good Surgical Practice	Royal College of Surgeons of England Ref: 317-018-001
10.09.2002	Speciality Advisory Committee (SAC) –Paediatrics meeting attended by the CMO. Members recommended that an audit of the guidelines in due course would be valuable	Ref: 075-077-295

Date	Events (after Raychel's death)	Reference
18.09.2002	CMAC (General Medical Care sub-committee) meet on 18.09.2002 to discuss legal difficulties in commissioning services from NICE; 'review of paediatric surgery' and the CMO's view that greater specialisation was required to maintain skills in surgery & anaesthesia	Ref: 320-035-007
25.09.2002	Meeting of Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) with Dr. O'Donohoe (Consultant Paediatrician) to provide him with feedback on the 'external review' undertaken by the Royal College of Paediatrics and Child Health. The following was agreed: (i) Dr. O'Donohoe would get up to date with his CPD (ii) The relationship between Dr. Ashgar and Dr. O'Donohoe to be addressed with a view to facilitating them putting their differences behind them, including engaging in mediation (iii) Joint working (iv) Recommendations concerning Dr. Ashgar – the 'review' would be shared with Dr. Ashgar	Ref: 035-026-087
01.10.2002	SAC (Anaesthetics) meeting 01.10.02 on consent; paediatric surgery & concern from Altnagelvin on maintaining surgical skills with inadequate volume	Ref: 320-114-001
02.10.2002	Speciality Advisory Committee (SAC) – Anaesthetics	
22.10.2002	Meeting of Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) with Dr. Ashgar (Staff Grade Paediatrician) to provide him with feedback on the 'external review' undertaken by the Royal College of Paediatrics and Child Health	Ref: 035-028-096
25.10.2002	Letter from Dr. Jim Kelly to Dr. Ashgar confirming the outcome of the meeting on 22nd October 2002 that Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) had with him and the agreements reached	Ref: 035-028-096
04.11.2002	Dr. Robert Taylor writes to Dr. Nesbitt enclosing MCA *"yellow card"* report	Ref: 321-020b-001
07.11.2002	CREST meeting Guidelines in respect of the prevention of hyponatraemia in adult patients in final draft. Dr. Russell reported: *"The production of the guidelines had highlighted that junior doctors and nurses were not rained[sic] in pharmacology and fluid balance and* ***these issues needed to be brought to the attention of the Universities****."* (Emphasis added)	Ref: 075-068-232
07.11.2002	Letter from HM Coroner to CMO where HM Coroner explains why the Department was not made aware by his office of Adam Strain's death: *"My clear understanding was that changes would be made in relation to the future management of cases such as that of Adam Strain. Therefore I did not see a need to formal action pursuant to the Rule."* Coroner seeks direction as to the reporting of deaths, such as Adam Strain, to the Department	Ref: 006-015-310
13.11.2002	CMO, Dr. Campbell writes to the Coroner welcoming the opportunity to meet to *"discuss how the health service might work with the Coroner's Office to improve the management of risk"*	Ref: 012-064a-325
10.12.2002	SAC (General Surgery) meeting held on 10.12.02: discussion re Paediatric Surgery- there was potential that all surgeons would withdraw from the surgical management of children; Paediatric General Surgical Service; and Consent to Examination or Treatment.	Ref: 320-122-001
2003	Postgraduate Medical Education & Training Board (PMETB), a non-governmental independent regulatory body, is established under the General and Specialist Medical Practice (Education, Training and Qualifications) Order 2003 to develop a single, unifying framework for postgraduate medical education and training. It did not commence operations until September 2005	

Date	Events (after Raychel's death)	Reference
January 2003	Managing Medical Problems in Children: RBHSC (3rd Edition) published, with contributions from: Drs. Bartholome (Claire); Hanrahan (Raychel); O'Connor (Adam); Sands; Steen (Claire); Taylor (Adam & Claire); Webb (Adam & Claire).	INQ0485-11
13.01.2003	DHSSPS(NI) publishes guidelines 'Governance in the HPSS – Clinical and Social Care Governance: Guidelines for Implementation' to assist Boards, Trusts etc to *"formally begin the process of developing and implementing clinical and social care governance arrangements within your organisation or area of responsibility"(p.1).* That process was to start from the date of the circular, which was to be read in conjunction with: *"guidance already issued on the implementation of a common system of risk management across the HPSS and the development of controls assurance standards for financial and organisational aspects of governance"(p.1)* The clinical and social care governance framework was intended to build on and strengthen activities that included: • *Audit* • *Identifying, promoting and sharing good practice, learning lessons from best practice as well as poor performance* • *Risk assessment and risk management* • *Adverse incident management (emphasis added, p.6)* See also: • *An open, honest and proactive system where people can report poor performance, near misses and adverse events to allow them to be appropriately dealt with, lessons learnt and shared within and where appropriate outwith the organisation* (Emphasis added, p.8)	HSS (PPM) 10/2002 Ref: 306-119-001
February 2003	The Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 The Order places a statutory duty of quality on all HPSS providers. See proposals in 'Best Practice Best Care' April 2001	Ref: 010-039-234
February 2003	Department issues guidelines to the HPSS on implementing clinical and social care governance (HSS (PPM) 10/2002). These stressed the importance of organisations taking corporate responsibility for performance and for providing the highest possible standard of clinical and social care. Emphasis was also placed on adverse incident management.	Ref: WS-062/1, p.5
05.02.2003	**Raychel's Inquest** Inquest carried out by John Leckey (Coroner for the District of Greater Belfast) Verdict on Inquest	
06.02.2003	CREST meeting – Sub group report on adult guidelines. Finalised. Proposal for a ½ day seminar in May 2003 to launch.	Ref: 075-069-248
11.02.2003	Coroner writes to CMO following the Inquest into Raychel's death and enclosing the Verdict on Inquest. He refers to the praise given to the new 'protocol' on hyponatraemia and Dr Ted Sumner's view that they should be brought to the attention of the CMOs of England & Wales, Scotland and the Republic of Ireland. He also stated: *"The issue was discussed as to how medical information should be disseminated. The view expressed by a number of the medical witnesses was that journal articles alone do not provide the solution … That being* ***so it was felt that the Department of Health might have a responsibility in this area*** *although what the mechanism should be no-one could say … on occasions I have wondered if the results of these inquests and the evidence of independent experts have been made available for consideration by members of the medical profession. Unfortunately, it would now appear that this is unlikely to have happened as there is* ***no obvious mechanism for the dissemination of this information****.* *… None of the surgical team, which was responsible for Raychel and for the fluids given her, seemed aware of this condition [hyponatraemia****]. Mr Robert Gilliland, Consultant Surgeon, stated that he had not heard of it until after Raychel's death****."* (Emphasis added)	Ref: 006-002-156
17.02.2003	CMO gives interview to UTV Insight programme regarding Raychel's death. She states *"I was not aware of any other death from hyponatraemia in a normal, healthy child in Northern Ireland."*	Ref: 069A-033-078

Date	Events (after Raychel's death)	Reference
20.02.2003	Note from Dr Miriam McCarthy to CMO and Des Browne re: inquest verdict on Raychel Ferguson with recommendations and background notes	Ref: 006-039-389
23.02.2003	Letter from Dr. Taylor to the Coroner dated 23rd February 2003 stating that the problem of fluid and electrolyte management has been *"emphasised over and over again"* in his capacity as Director of APLS	Ref: 064-006-034
27.02.2003	UTV Insight broadcast entitled "Vital Signs" which concentrated on Raychel's treatment and death, and which, although he was not named, also mentioned Adam's death.	Ref: 068a-005-015
27.02.2003	Letter from Stanley Millar (Chief Officer of the Western Health and Social Services Council) to the Coroner referring to his knowledge of the death of Lucy on 14th April 2000 and the post mortem examination discovered "a swollen brain with generalised oedema". He then stated: *"I contacted the Coroner's Service to ask about the arrangement of an Inquest but I was told it was not necessary"* and went on to refer to the Western Health and Social Services Council (on 19th February 2003) and being struck by the similarities between Raychel's and Lucy's deaths: *"I am left with two questions which you may be able to answer* *(1) Are there direct parallels in the events leading up to the deaths of both girls* *(2) Would an Inquest in 2000/2001 have led to the recommendations from the Raychel Ferguson Inquest being shared at an earlier date and the consequent saving of her life?* *I am also left with a query as to other similar uncovered deaths across the UK. At least the Altnagelvin Medical Team have 'broadcast' the phenomena of Hyponatraemia and raised an awareness of the potential problem with children"* (Emphasis added)	Ref: 006-012-297
27.02.2003	Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 passed, creating the legal framework for strengthening the quality of health and social care services in Northern Ireland and extended regulation and quality improvement to a wide range of establishments and agencies. It came into effect a month later.	
February 2003	CMO mentions the problem of hyponatraemia at a quarterly meeting with the other UK Chief Medical Officers, following the Coroner's suggestion. Other CMOs suggested that a copy of the guidance be send to the National Patients Safety Agency of England and Wales as no guidance on hyponatraemia had been published in the rest of the UK (sent 14.03.03 by McCarthy)	Ref: 006-002-160
03.03.2003	Coroner copies to CMO a letter to Sumner The Coroner asks Dr Sumner for his opinion whether there is a connection between the death of Raychel and that of Lucy. Also enclosed is a letter from Mr Millar to Coroner which raises his concerns as to the similarities in the deaths CMO states that this was when she first became aware of Lucy's death (on receipt of the letter on 5th March 2003).	Ref: 006-010-294 Ref: WS-075/1, p.3
11.03.2003	Coroner writes to Professor Jack Crane seeking a meeting to discuss his concerns that *"when deaths of children in particular are reported to my office the proper questions may not be asked."*	Ref: 012-065b-335
14.03.2003	Letter from Dr. Miriam McCarthy to Susan Williams (Joint Chief Executive, National Patient Safety Agency) enclosing the guidance on the Prevention of Hyponatraemia in Children in the form of an A4 poster and seeking her opinion on: *"whether this may be an issue that the National Patient Safety Agency would like to explore in greater detail"*	Ref: 006-052-434
April 2003	The Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 comes into force in April 2003 placing a statutory duty of quality on all HPPS providers. Core risk management standard introduced as part of the establishment of controls assurance standards across the HPSS. These arrangements also emphasised the need for an adverse incident reporting system to be in operation and the Risk Management Controls Assurance Standard includes a specific criterion on adverse incidents which requires *"an agreed*	Ref: WS-062/1, p.5

Date	Events (after Raychel's death)	Reference
	process for reporting, managing, analysing and learning from adverse incidents" to be in place.	
01.04.2003	Medicines and Healthcare products Regulatory Agency formed from a merger of the Medical Devices Agency (MDA) and the Medicines	
07.04.2003	Paediatric Antiemetic Guidelines for use in post-operative patients aged 12 months to 12 years – Patrick Stewart (Consultant Paediatrician at Altnagelvin)	BC-00/3-11 INQ 0642-12 (DLS attachments)
11.04.2003	Susan Williams responds to Dr. Miriam McCarthy's letter of 14th March 2003 stating: *"We are aware that this condition is a recognised risk of receiving intravenous fluids. The matter is one which the National Patient Safety Agency would like to explore in detail further as there is the potential to influence practice to prevent this type of incident happening again.* *We have referred your letter to Suzan Smallman, Assistant Director for Children's Services, in order that she may investigate the matter and make recommendations as to whether we should include this in our plan of work."*(Emphasis added)	Ref: 006-051-433
28.04.2003	Luce Report submitted to the Minister of an Investigation in England, Wales & Northern Ireland: The Report of a Fundamental Review into Death Certification and Investigation.	
01.05.2003	CREST meeting – Adult guidelines with the printers Seminar to launch at Stormont hotel on 23rd June 2003, relevant specialists invited to attend	Ref: 075-070-250
01.05.2003	Letters sent by John J. Rice & Co to the Chief Executive at Altnagelvin, and RGH promising proceedings unless satisfactory proposals for compensation are made. States that either or both Altnagelvin or the RBHSC are liable for Raychel's death	Ref: 024-001-001
02.05.2003	Dr. Nesbitt and Mr. Bateson issue joint Memorandum regarding Paediatric Fluid Management, requiring all surgeons to conduct ward rounds, and to have responsibility for the management of children admitted under their care	Ref: 021-044-091

SCHEDULE 6: After Conor's death

Date	Events (after Conor's death)	Reference
12.05.2003	**Conor's death**	
13.05.2003	Coroner telephoned Dr. McCarthy to advise that there may be another 'death from hyponatraemia', a 16 year old boy with cerebral palsy transferred from Craigavon to the Royal who died on 12th May 2003. He said he was awaiting the results of the post mortem and may hold an Inquest Dr. McCarthy e-mails the information to the CMO & Dr. Ian Carson (Deputy CMO)	Ref: 075-064-203
June 2003	Report reviewing the Death Certification and Investigation system in England, Wales and Northern Ireland (The Luce Report). The report recommends that Coroners should have an obligation to send to any public or other body an account of any inquest or investigation finding relevant to the body's services, activities or products and to the safety of its users, customers or staff.	Ref: WS-075/1, p.14
05.06.2003	Therese Brown issues letter to Mr. A. Maginness of Directorate of Legal Services, enclosing the letter from John J. Rice of the 6th May 2003. Acknowledgement of receipt of letter also issued to John J. Rice	Ref: 024-002-002 & 024-003-003
23.06.2003	CREST seminar to launch the adult guidelines.	Ref: 075-071-264

Date	Events (after Conor's death)	Reference
16.07.2003	CREST issued guidance on management of hyponatraemia in adults	Ref: 073-030-138
19.09.2003	Deloitte publish "Evaluation of HPSS Baseline Assessment and Action Plan – Clinical and Social Care Governance" Final Report. The report highlighted a lack of understanding and implementation of clinical and social care governance. This included a lack of co-ordinated risk activities including identification and management of risk, risk registers and risk audits. Eastern Health & Social Services Board (the one for the Royal) and the Royal are recorded as: *"assessment and action plan was generally poor based on most performance criteria … Significant weaknesses included no risk management policy, no complaints/customer care training, no communication policy, no workforce plan, no system for promoting best practice and no clinical governance policy"* Ref: WS-075/1, p.87 *"Royal Group of Hospitals …. The Trust did not supply an action plan and the information submitted only covered about 20% of that required in the original baseline assessment. This resulted in an overall score of red"* Ref: WS-075/1, p.89 See also: ▪ Status of Clinical & Social Care Governance in Northern Ireland – Ref: WS-075/1, p.101 ▪ Detailed areas for HPSS Support – 'Effective leadership and management' – Ref: WS-075/1, p.103 ▪ Baseline assessment of Eastern Health & Social Services Board – Ref: WS-075/1, p.117	Ref: WS-075/1, p.76
01.10.2003	Altnagelvin Trust Response to Press Enquiry issued to Roddy McGregor of the Irish News stating: *"The matter is now the subject of litigation and the Trust is not therefore in a position to make any comment in the public arena"*	Ref: 024-015-023
07.10.2003	SAC (Paediatrics) meeting CMO attended. Dr McAloon advised an audit of guidelines is ongoing.	Ref: 075-078-303
November 2003	Statement issued by the Royal College of Paediatrics and Child Health on 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline' and asks the Royal College of Anaesthetists to disseminate the following, which it does via its website: *"There is a possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline. The issue has been discussed by both the Medical Control Agency/Committee on Safety Medicines and the Joint RCPCH/NPPG Standing Committee on Medicines. The issue has arisen because of a recent report of a case of fatal hyponatraemia in a child following the use of 4% dextrose/01.8% saline after surgery.* *However, a review of the literature shows that acute hyponatraemia in children following the administration of hyptonic fluids … is well documented … as far back as the late 1960s … In contrast 4% dextrose/0.18% saline is isotonic before being administered but is effectively hypotonic in the sick child once the glucose has metabolised.* ***Children in the post-operative period are particularly susceptible to serious and occasionally fatal neurological complications of acute hyponatraemia and sick children in other 'stressful' situations may also be at additional risk***" (Emphasis added)	
06.11.2003	CREST meeting Dr Russell reported that guidelines for management of hyponatraemia in adults launched on 23rd June 2003	Ref: 075-071-258
November 2003	Publication by Drs John Jenkins, Robert Taylor, Miriam McCarthy of 'Prevention of hyponatraemia in children receiving fluid therapy': The Ulster Medical Journal, Volume 72, No.2, pp.69-72	Ref: 007-083-198
November 2003	Statement issued by the Royal College of Paediatrics and Child Health on 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline' and asks the Royal College of Anaesthetists to disseminate the following, which it does via its	

Date	Events (after Conor's death)	Reference
	website: *"There is a **possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline. The issue has been discussed by both the Medical Control Agency/Committee on Safety Medicines and the Joint RCPCH/NPPG Standing Committee on Medicines**. The issue has arisen because of a recent report of a case of fatal hyponatraemia in a child following the use of 4% dextrose/01.8% saline after surgery.* *However, a review of the literature shows that acute hyponatraemia in children following the administration of hyptonic fluids … is well documented … as far back as the late 1960s … In contrast 4% dextrose/0.18% saline is isotonic before being administered but is effectively hypotonic in the sick child once the glucose has metabolised. **Children in the post-operative period are particularly susceptible to serious and occasionally fatal neurological complications of acute hyponatraemia and sick children in other 'stressful' situations may also be at additional risk**"* (Emphasis added)	
09.12.2003	SAC (General Surgery) meeting held on 09.12.03: Hospital at Night and NCEPOD Report.	Ref: 320-123-001
10.12.2003	Sperrin Lakeland Trust accept liability for Lucy's death	
February 2004	Royal College of Anaesthetists re-publishes on its website the Statement issued by the Royal College of Paediatrics and Child Health on 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline'	
10.02.2004	SAC (Paediatrics) meeting held on 10.02.04 on: upper age limit for admission to RBHSC; audit of hyponatraemia	Ref: 320-057-001
17.02.2004	**Lucy's Inquest** Inquest carried out by John Leckey (Coroner for the District of Greater Belfast)	
19.02.2004	**Lucy's Inquest continued** Verdict on Inquest: Cause of death: I(a) cerebral oedema, (b) acute dilutional hyponatraemia, (c) excess dilute fluid and II gastroenteritis: *"The collapse which led to her death was a direct consequence of an inappropriate fluid replacement therapy in that the use of 0.18% saline to make up deficits from vomiting and diarrhoea was wrong, too much of it was given and there had been a failure to regulate the rate of infusion. This led to the development of dilutional hyponatraemia which in turn caused acute brain swelling and death. The errors in relation to the fluid replacement therapy were compounded by poor quality medical record keeping and confusion by the nursing staff as to the fluid regime prescribed." (emphasis added)*	Ref: 006-001-030
19.02.2004	Letter of the Coroner to Dr. Henrietta Campbell (Chief Medical Officer) enclosing Reports of the Expert Witnesses and correspondence of Sperrin Lakeland Trust	Ref: 006-008-290
19.02.2004	Letter from the Coroner to Dr Nesbitt (cc to the CMO): (i) advising of the outcome of the Inquest into Lucy's death; (ii) enclosing the Expert Reports of Drs Edward Sumner, Dewi Evans and John Jenkins; (iii) enclosing a copy of correspondence received by Mr Crawford from Sperrin & Lakeland Trust to the effect that an independent review carried out by Dr Murray Quinn (Consultant Paediatrician at Altnagelvin Hospital); (iv) indicating that Dr Quinn reconsider his views in the light of the Expert Reports and the admission by Dr Auterson (Consultant Anaesthetist at the Erne) that: "*the wrong fluid was given, too much of it was given and the rate of infusion should have been regulated, Lucy's care was not up to standard*" Also: "*I strongly believe that Dr Quinn and Altnagelvin Hospital (because of the death of Raychel Ferguson) should consider afresh the issues of fluid management of children*"	Ref: 006-009-292
23.02.2004	Coroner writes to CMO referring the Inquest papers in Lucy Crawford's case to her under Rule 23(2) to ask if there was merit in the Working Party examining the Inquest papers with a view to possible Guideline amendment, in particular: (a) medical record keeping; and (b) nurses'	Ref: 006-001-022

Date	Events (after Conor's death)	Reference
	understanding of fluid regime prescribed Other concerns: (a) Whether it is the responsibility of the Medical Director of a hospital to ensure proper standard of medical record keeping are maintained; (b) Whether there is any monitoring of the standard of record keeping; (c) Whether nurses are briefed on a regular basis as to the implications of the Protocol	
23.02.2004	Letter of the Coroner to the Chief Medical Officer referring the Inquest papers to her referring to: (i) Possible changes that might be made to the Protocol established after the Inquest into the death of Raychel Ferguson, in particular: (a) medical record keeping; and (b) nurses' understanding of fluid regime prescribed (ii) Particular concerns: (a) Whether it is the responsibility of the Medical Director of a hospital to ensure proper standard of medical record keeping are maintained; (b) Whether there is any monitoring of the standard of record keeping; (c) Whether nurses are briefed on a regular basis as to the implications of the Protocol	
27.02.2004	Departmental Board Meeting Dr Carson refers to inquest into the death of Lucy Crawford and that Dept meeting with Trust that day to discuss the case Clive Gowdy claims to have first become aware of Lucy's death	Ref: 004-019-236 Ref: WS-062/1, p.2
March 2004	Position paper published by Home Office on 'Reforming the Coroner and Death Certification Service'. It recommended that Coroner's reports should be sent to Health and Safety Executive and Directors of Public Health, as well as the individual or body responsible for any shortcomings identified	Ref: WS-075/1, p.14
04.03.2004	CMO writes to Chief Executives of the Trusts to request assurance that guidance on hyponatraemia is being implemented Responses – Dr. Nesbitt (Altnagelvin), Sperrin; United; Causeway; Ulster; Craigavon; Belfast	Ref: 007-067-136; Ref: 007-066-137; Ref: 007-068-138; Ref: 007-069-139; Ref: 007-069-140; Ref: 007-069-141; Ref: 007-071-143; Ref: 007-072-144; Ref: 007-073-145; Ref: 007-074-147
11.03.2004	Dr. Nesbitt writes to the Coroner that *"it is unfortunate that the earlier death was not brought to our attention in order to cause the alert throughout Northern Ireland, which regrettably only occurred following Raychel's death"*	Ref: 021-042-087
18.03.2004	CMO interview with BBC Radio Ulster's Evening Extra. CMO states that the fluids given to her were those being used in "*ordinary custom and practice throughout the whole of the NHS except for one or two practitioners who'd begun to recognise this issue of hyponatraemia*." She stated that the body "*goes through this abnormal response in just a very few cases*" CMO interview with BBC Newsline.	Ref: 004-010-166 Ref: 004-010-163
22.03.2004	Dr. Nesbitt writes to the CMO, Dr. Henrietta Campbell to confirm that the Guidance was fully endorsed by Altnagelvin, incorporated and implementation monitored through the Trust's incident reporting mechanism	Ref: 077-066-136
25.03.2004	CMO interview with UTV. When discussing Lucy and Raychel's deaths, she refers to *"the abnormal reaction which is seen in very few children"* and *"the very abnormal reaction in certain children"*	Ref: 006-037-375
31.03.2004	Deloitte's Report to the Department on 'adverse incidents and near miss reporting in the HPSS and special agencies'	Ref: WS-062/1, p.5 & WS-075/1, p.142

Date	Events (after Conor's death)	Reference
	The report noted 'inconsistencies in approach, including incident reporting systems, monitoring, collation, analysis and follow-up' and its recommendations included: • A consistent approach to the definition and coding of adverse incidents and near misses … • Links between local reporting arrangements and national, statutory, and confidential reporting mechanisms … • Improved training and development of staff in the use of risk assessment tools, such as root cause analysis There is reference to the Royal's 'incident reporting policies' – Ref: WS-075/1, p.171	
April 2004	National Patient Safety Agency publishes: 'Seven Steps to Patient Safety; An overview guide for NHS staff', providing as 'step 6': "*develop a local policy which describes the criteria for when your organisation should undertake a Root Cause Analysis (RCA) or Significant Event Audit (SEA). These criteria should include all incidents that have led to permanent harm or death … identify which other departments might be affected in future, and share your learning more widely*" (p.18, emphasis added)	
April 2004	NI Council for Postgraduate Medical & Dental Education established under the Health & Personal Social Services Act as a special agency sponsored by the DHSSPS – replacing the NI Council for Postgraduate Medical & Dental Education. Its role is inter alia: ▪ organising, accrediting and reviewing educational and training activities for doctors and dentists; ▪ monitoring quality standards in medical and dental education and assessing the educational value of training posts; ▪ managing foundation and specialty, including general practice, training programmes; ▪ implementing and developing a framework for regular, assessment, appraisal and annual review of doctors and dentists in training; ▪ advising on the needs of international medical and dental graduates training in Northern Ireland; ▪ the provision of authoritative advice to the Department of Health, Social Services and Public Safety; ▪ responding to wider changes in the regulation, supervision and quality assurance of medical and dental education and training	
06.04.2004	Ministerial submission prepared and sent to the Minister – Dr McCarthy and Dr Campbell consulted regarding the content of this briefing	Ref: 001-010-024 Ref: 001-011-032
07.04.2004	Dr. Stephen Playfor, Consultant Paediatric Intensivist at Royal Manchester Children's hospital comments on guidelines He thinks guidelines are a step in the right direction but do not go far enough in stating that 4%dex/0.18%saline should never be used	Ref: 075-044-152
09.04.2004	CMO offers to meet with the parents of Lucy Crawford	Ref: 075-041-144
15.04.2004	CMO asks Sir Cyril Chantler at Gt Ormond Street to be independent assessor of hyponatraemia guidelines	Ref: 075-040-140
27.04.2004	Dr. Corrigan writes to Therese Brown confirming regional Paediatric IV fluid therapy audit copied, and presented to the SAC (Paediatrics)	Ref: 021-040-083
06.05.2004	CREST meeting Sub group reports on comments in respect of guidelines: *"Dr. Russell reported that he had received correspondence from Dr. Winston Shaer, a South African Plastic Surgeon working in London and Dr. Anil Mane, Consultant Physician, Erne Hospital. Dr. Shaer had felt that the CREST* ***guidelines didn't sufficiently cover the surgical point of view****. Dr. Russell had replied that this aspect had been alluded to at the launch of the guidelines but that the guidelines had been targeted at junior doctors and nursing staff"* (Emphasis added)	Ref: 075-072-274

Date	Events (after Conor's death)	Reference
12.05.2004	Lucy's parents request a meeting with the Minister of Health	Ref: 001-053-164
13.05.2004	Letter from the Permanent Secretary Mr. Clive Gowdy to Mr. Alan Bremner, Controller of Programmes UTV regarding an interview with the CMO Dr. Campbell	Ref: 023-005-006
14.05.2004	Writ lodged with the High Court of Justice on 14th May 2004 on behalf of the Fergusons	Ref: 024-019-028
19.05.2004	'Platform' Article by Denzil McDaniel in Irish News	
21.05.2004	'Platform' Article by CMO in Irish News in response to Denzil McDaniel's article	Ref: 004-010-154
25.05.2004	CMO interview with Denzil McDaniel of the Impartial Reporter	Ref: 069A-035-090
28.05.2004	Ministerial briefing prepared by Dr McCarthy	Ref: 004-010-105
28.05.2004	Board meeting – Lucy Crawford discussed	Ref: 004-020-238
28.05.2004	E-mail from Jonathan Bill (Deputy Director, Quality & Performance Unit) to Noel McCann (Director, Planning & Performance Management). In relation to informal notification of incidents, he notes: *"Frankly the picture is not a good one. Notification is patchy, the numbers small and there is no overall analysis. I do think Minister is somewhat vulnerable to the accusation that the Department is not aware what is going on as regards serious incidents. (Secretary had taken the line that it was usual for CMO / Department to be notified, and Lucy Crawford was an exception .... we have no impirical (sic) evidence to support this"*	Ref: 010-025-180
01.06.2004	Ministerial briefing prepared by Dr McCarthy	Ref: 004-010-055
03.06.2004	Interview of Minister for Health by Denzil McDaniel of the Impartial Reporter	Ref: 001-072-252
06.06.2004	**Conor's Inquest** Inquest carried out by John Leckey (Coroner for the District of Greater Belfast) Verdict on Inquest: 1(a) brainstem failure (b) cerebral oedema (c) hypoxia, ischaemia, seizures and infarction, and II cerebral palsy	
07.06.2004	Trevor Birney (producer UTV 'Insight Programme') interviews Dr. John Jenkins, Consultant Paediatrician, Antrim Area Hospital	Ref: 069A-056-179
09.06.2004	Trevor Birney rings Marie Dunne to seek and interview with Dr. Nesbitt regarding a clinical view of hyponatraemia	Ref: 023-006-009
11.06.2004	Dr. Sumner writes to Dr. Jenkins, the Coroner and the CMO: *"My overall impression from these cases is that the basics of fluid management ware neither well understood, nor properly carried out."*	Ref: 006-043-406
15.06.2004	Altnagelvin HSST issue Statement for Insight Programme summarising sequence of events following death of Raychel	Ref: 023-007-010
28.06.2004	CMO asks her staff to re convene the working group on hyponatraemia in light of the remarks of Sir Cyril Chantler	Ref: 075-008-018
28.06.2004	CMO writes to Coroner and advises him of initiatives the Department is taking forward: ▪ Workshop in early Autumn to raise awareness of the basics of fluid management; ▪ Developing better hospitals initiative to lead to a more specialist approach to the care of	Ref: 006-042-401

Date	Events (after Conor's death)	Reference
	critically ill children; ▪ Health and Social Care Records Steering Group chaired by Dr. Carson has completed a review of records management - to be issued with the intention that it will address shortcomings referred to in the Inquests of the children	
05.07.2004	Dr. McCarthy advises Dr. Jenkins (Antrim) and others that the CMO is reviewing the 2002 hyponatraemia guidelines and seeks: *"any additions or amendments that you think should be made. In doing so it would be particularly helpful if you could take account of the input of clinical staff who have used the guidance and findings of any relevant audit conducted within your Trust".* The circulation list included Drs. Taylor & Crean (RBHSC), Dr. Nesbitt (Altnagelvin), Mr. Marshall (Erne) and Ms. McElkerney (Ulster Hospital)	Ref: 007-062-131
05.07.2004	Dr Jenkins' response identifies those who may not have access to the literature/guidance but who treat children i.e. adult /surgical	Ref: 007-064-134
07.07.2004	DHSSPS(NI) issues interim guidance on: 'Reporting and Follow-up on Serious Adverse Incidents'. The purpose of the guidance was stated to be: *"To provide interim advice for HPSS organisations and Special Agencies on the reporting and management of serious adverse incidents and near misses, pending the issue of more comprehensive guidance on safety", with 'serious adverse incidents defined as: "any event or circumstance arising during the course of the business of a HSS organisation/Special Agency or commissioned service that led, or could have led to serious unintended or unexpected harm, loss or damage"* Para.16 of the interim guidance required: *"where a serious adverse incident occurs it should be reported immediately to the senior manager … If the senior manager considers the incident is likely to:* • *be serious enough to warrant regional action to improve safety or care within the broader HPSS;* • *be of public concern; or* • *require an independent review* *he/she should provide the Department with a brief report … within 72 hours of the incident being discovered"* Further guidance was to be provided once the Safety in Health and Social Care Steering Group and reported to the Department on its strategic review of the reporting, recording and investigation of adverse incidents and near misses Clinical and Social Care Governance Support Team appointed in 2004	Ref: HSS(PPM)06/04 Ref: WS-062/1, p.5
07.07.2004	Response of Dr. Fiona Kennedy (Consultant in Public Health Medicine – North HSSB) response to Dr. McCarthy's letter of 5th July 2004 – care in weighing a child and not to confuse kg and lbs. She referred to raising that at the time of the original 2002 guidelines and to Dr. Taylor advising that *"there have been some near misses from staff making errors in this way when calculating the amount of intravenous fluid (or drug dosage) required for a child"*	Ref: 007-065-135
08.07.2004	CMO meets with Sir Cyril Chantler, Dr Ian Carson and Dr McCarthy and discusses the Hyponatraemia guidance to identify any amendments that Sir Cyril Chantler thought were appropriate. Recent literature was noted. Possibility discussed of explicit guidance on prescription of IV fluids with low Na levels.	Ref: WS-075/1, p.20
08.07.2004	CMO writes to Prof Jack McCluggage of NI Council for Postgraduate Medical & Dental Education: *"A number of recent coroner's inquests have highlighted the need for better training in fluid administration and management, particularly in children.* *As part of a strategy to address this problem I would be pleased if you would ask the training committees to consider this as a priority area. We have developed guidelines for fluid maintenance and replacement which should form the basis of a training programme. Many units have also included fluid management in their audit programme and it is essential* ***that*** *doctors in training participate in such audits"* (Emphasis added)	Ref: 075-007-017
08.07.2004	CMO writes to Dr. Maurice Savage (Director of Undergraduate Education – QUB Medical	Ref: WS-075/1, p.30

Date	Events (after Conor's death)	Reference
	School) cc to Dr. John Jenkins reminding him that the Coroner had highlighted the need for better training in fluid management, particularly in children. She referred to the guidelines for fluid management in children and for adults and stated: *"It is essential however that we address the needs for better training and education in this area. I have asked Jack McCluggage to take this forward through the training committees, but I also recognise the need for education and awareness at undergraduate level and at PRHO level. I would be pleased if you would consider how this might be taken forward"* (Emphasis added)	
20.07.2004	Letter from Professor Jack McCluggage to: (i) Chair, Paediatric TC – Dr. McAloon; (ii) TPD/Adviser, Paediatric TC – Dr. Shields; (iii) Chair, Medical Specialities TC – Dr. McMahon; (iv) Adviser, Medical Specialities TC – Dr. Collins. The letter enclosed the correspondence from the CMO and stated: *"As requested please bring to the attention of your Training Committee and consider as a priority area"*	
26.07.2004	Letter from Dr Maurice Savage to CMO outlining how fluid management is taught	Ref: WS-075/1, p.12
?	A multi agency group established comprising DHSSPS(NI) officials, PSNI, HSE and the Coroners Service to develop a Memorandum of Understanding for consultation for the investigation of death and serious incidents in hospitals	
02.08.2004	Regional audit for 2003/2004 by Dr.McAloon, examine adherence to DHSSPS(NI) Guidelines, reported to the CMO	Ref: 007-092-234
12.08.2004	CMO requested meeting to facilitate discussion on proposed amendments – Dr McCarthy sent letter to Jenkins, Taylor, Crean, Loughrey and McAloon	Ref: 007-055-120
02.09.2004	Meeting held in Castle Buildings to share information regarding the planned Insight Programme	Ref: 023-008-012
20.09.2004	E-mail from Christine Stewart (Press & Public Relations Officer at the Royal) to Colm Shannon (DHSSPS(NI)) advising that she had just spoken to Dr Robert Taylor: *"Following a detailed examination of the issues surrounding patient as there were* ***no new learning points, and therefore no need to disseminate any information****. Our hospital has an established structure for the teaching of the management of fluids to doctors in training"* (Emphasis added)	Ref: 023-045-105
22.09.2004	Dr McCarthy met with members of the Working Group. Agreed that rather than amend the guidance, it would be complemented with a fluid care pathway.	Ref: WS-075/1, p.20
23.09.2004	Letter of the Coroner to the GMC (Fitness to Practise Directorate)	
27.09.2004	Press statement of Sperrin Lakeland Health and Social Care Trust to UTV stating: *"We would wish to assure the people of our local community that the systems which contributed to Lucy's death in April 2000 have been changed and improved"*	Ref: 023-012-017
05.10.2004	SAC (Paediatrics) meeting CMO attended. Dr McAloon reported on hyponatraemia audit- implementation incomplete. Dr McAloon reporting findings to forthcoming workshop and looking at a re design of fluid charts	Ref: 075-079-315
21.10.2004	UTV Insight programme – 'Why hospitals kill' Clive Gowdy states he first became aware of Adam's death around the time of the UTV programme	Ref: WS-062/1, p.2
Date Unknown	Claire's parents contact the Royal afterwards as they had continuing concerns over Claire's death.	

Date	Events (after Conor's death)	Reference
Date Unknown	Professor Young States in his deposition to the Coroner that: *"in my opinion hyponatraemia may have made a contribution to the development of cerebral oedema in Claire's case. I advised that it would be appropriate to consider discussing the case with the Coroner for an independent external opinion with access to statements from all of the staff involved in Claire's case".*	
22.10.2004	Departmental Board meeting – allegations of Insight programme discussed	Ref: WS-084/1, p.3
28.10.2004	Request by Clive Gowdy to the Health Estates Agency for any information in relation to Lucy, Raychel and Adam	Ref: 001-095-320
29.10.2004	Mr. Guckian replies confirming all documents are secured and available for inspection	Ref: 021-016-034
01.11.2004	Health Minister Angela Smith announces Public Inquiry	
November 2004	Dr McCarthy writes to the remaining Trusts seeking confirmation of compliance with the Hyponatraemia guidelines, receiving the following responses: Greenpark, Mater, Newry & Mourne, Royal Group	Ref: 073-038-163 Ref: 073-034-144 Ref: 073-031-139 Ref: 073-030-136
04.11.2004	Letter from Mr Clive Gowdy Permanent Secretary DHSSPS to Mr P McGowan Chair WHSSC re: UTV Insight Programme (instructions to secure and index files re: Lucy Crawford and Raychel Ferguson)	Ref: 014-022-042
04.11.2004	Mr. Tom Melaugh, Director of Clinical Support Services issued Memorandum to Mrs. Irene Duddy, Director of Nursing, in relation to the Insight Programme	Ref: 021-014-031
05.11.2004	CMO wrote to Dr McAloon inviting him to convene and chair a small multi-disciplinary group to develop a care pathway for fluid management	Ref: WS-075/1, p.20
06.11.2004	The Ferguson family make a formal complaint to the GMC Fitness to Practise Directorate in respect of the CMO, Dr Quinn, Dr Hanrahan, Dr Jenkins, Dr Nesbitt and Dr Kelly.	Ref: GMC Tab 16, p.1
18.11.2004	Angela Smith MP announces the Terms of Reference for the Inquiry into the deaths of Adam, Lucy and Raychel.	
23.11.2004	Chief Executive Stella Burnside writes to Chairman of the Inquiry assuring the AHHSST's fullest cooperation	Ref: 021-009-021
01.12.2004	John O'Hara QC writes to Mr. Patrick McGowan seeking all notes, documents, records and reports in relation to the cases of Lucy Crawford and Raychel Ferguson	Ref: 014-023-044
07.12.2004	Meeting between Claire's parents and medical staff from the Royal (Drs. Rooney, Steen, Sands and Professor Young). Professor Young stated: *"At the Royal Hospitals, lessons have been learnt regarding management of sodium levels in children- which is still not the case in many UK hospitals"* advised Claire's parents to consider giving permission to refer the case to the Coroner.	Ref: 089-002-002
08.12.2004	Mr. Roberts writes to the Royal requesting answers to questions and referral to the Coroner.	Ref: 089-003-006
14.12.2004	SAC (General Surgery) meeting held on 14.12.04, discusses: General Surgery of childhood at a District General Hospital–Paper 3/04- difficulties on the way forward for training.	Ref: 320-124-001
16.12.2004	At the request of the family Dr. Walby reports Claire's case to the Coroner for investigation.	Ref: 089-004-008
21.12.2004	Dr. Nesbitt writes to Clinical Directors to ensure that where fluids are prescribed the solution chosen and the rate of administration are based on clinical examination and measurement of electrolytes.	Ref: WS-035/2 p.130

Date	Events (after Conor's death)	Reference
2004 (end)	National Reporting and Learning System (NRLS) developed by National Patient Safety Agency	Ref: WS-062/1, p.6
2005	The Departmental Board agrees to register with NICE as a commentator organisation in order to receive advance copies of documents at various stages throughout the guideline development process.	
January 2005	The Northern Ireland Regional Review of Clinical and Social Audit was tasked with issuing recommendations to the Department on future arrangements for the support of clinical and social care audit in Northern Ireland in support of the agenda set out in 'Best Practice-Best Care'. A range of interested parties were involved in the review including NIPEC, the two audit bodies (NIRAAC & RMAG), the Department and the Northern Ireland Medical and Dental Training Agency. The review, which was chaired by Dr. David Stewart, reported to the Department in January 2005. One of the principle findings was the need for a single regional audit focus, in place of the two current committees – RMAG and NIRAAC. The review concluded that the different roles of the audit groups were unclear and led to confusion and fragmentation of effort. It recommended that a single regional audit focus would help to ensure more effective development of clinical and social care audit in Northern Ireland.	
06.01.2005	1-day Workshop on Clinical Care of Children – 'Fluid Management': Dr. Jarlath McAloon (Consultant Paediatrician, Antrim Hospital) Dr J McAloon presented inter alia the Hyponatraemia audit results at a workshop on the Clinical Care of Children, chaired by CMO. Over 100 participants at the workshop with reps from various disciplines and Trusts involved in delivering children's services throughout NI. One of the issues covered at the workshop was hyponatraemia. Dr McAloon highlighted that the guidelines were not fully implemented across all trusts: *"Summary* •*Adherence to Regional guidelines is probably incomplete* •*There are identifiable hindrances to guideline implementation which can be overcome* •*There is also a need for further expert review of the guidance"*	Ref: WS-075/1, p.26 Ref: WS-075/1, p.11
17.01.2005	Mr. Roberts writes to the Inquiry Chairman to inform him of Claire's case and upcoming inquest.	
25.01.2005	Letter from Dr. Walby to the Coroner which states that, in a letter of 16th December 2004, he: *"referred to the provisional diagnosis as simply being that of a viral illness whereas the admitting Registrar had gone further and considered it to be encephalitis"*.	Ref: 097-005-006
03.02.2005	Letter from Dr. Herron to John Leckey in which it states: *"the central oedema that was present may have had many causes, one of which is hyponatraemia. The autopsy did not exclude this as a cause of brain swelling nor did it show any specific findings (structural changes) to make the diagnoses of hyponatraemia. I am unclear from the letter as to whether it is thought that the hyponatraemia was a primary factor in the case..."*	Ref: 097-003-004
10.02.2005	Clive Gowdy speaks at Nursing Conference on 'patient safety'	Ref: 073-003-014
	Royal College of Anaesthetists re-publishes on its website the Statement issued by the Royal College of Paediatrics and Child Health on: 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline'	
April 2005	Publication of Best Practice, Best Care, The Quality Standards for Health and Social Care: Supporting Implementation of Clinical and Social Care Governance in the HPSS.	Ref: WS-068/1, p.255
01.04.2005	HPSS Regulation and Quality Improvement Authority (RQIA) (established by Health & Social Personal Services (Quality Improvement & Regulation) (NI) Order 2003) commenced work. Role in relation to the inspection, regulation, investigation and review of performance within HSS organisations against 5 quality 'themes': ▪ Corporate leadership & Accountability	Ref: WS-062/1, p.5

Date	Events (after Conor's death)	Reference
	▪ Safe & Effective Care ▪ Accessible, Flexible & Responsive Services ▪ Promoting, Protecting & Improving Health & Social Well-being ▪ Effective Communication & Information	
06.04.2005	Circulation of Priorities For Action 2005/08 by DHSSPS.	Ref: WS-066/1, p.8
06.06.2005	Letter from the Inquiry Solicitor to Prof. Jack McCluggage (Chief Executive, NI Council for Postgraduate Medical & Dental Education) seeking information on: ▪ teaching/training on fluid management (and in particular hyponatraemia) and record keeping provided to postgraduate medical students as part of their training and continuous professional development in the 20 years prior to 1995 ▪ extent to which the teaching/training in Northern Ireland on fluid management (and in particular hyponatraemia) and record keeping provided to postgraduate medical students has changed since the deaths of Adam in 1995, Lucy in 2000 and Raychel in 2001 ▪ how NIMDTA ensures that as part of their continuous development, doctors who qualified before changes were made to the teaching of fluid management, incorporate training in fluid management and how to diagnose hyponatraemia in the continuous development education ▪ how NIMDTA ensures that doctors from overseas coming to work in Northern Ireland are trained in fluid management and hyponatraemia? ▪ changes in teaching/training of postgraduate doctors in record keeping since 1995? ▪ how NIMDTA ensures that doctors from overseas working in Northern Ireland are advised of the requirements for record keeping	
10.06.2005	Department up-date following the interim guidance in July 2004 on 'Reporting of Serious Adverse Incidents within the HPSS' (PPM 06/04) announcing a 'briefing session' for safety managers on 15th June 2006 when the Department would provide feedback on the operation of the reporting and management arrangements established by PPM 06/04	Ref: HSS (PPM) 05/05
10.06.2005	Two Incident Investigation Workshops for the HPSS arranged in 2005. They focused on the current experience in dealing with adverse incidents.	Ref: WS-062/1, p.5
14.06.2005	Letter from Dr. Terry McMurray (NIMDTA) to: (i) Advisers/Training Programme Directors of Specialty Training Committees; (ii) Postgraduate Clinical Tutors; (iii) Educational Co-ordinators; (iv) Director of Postgraduate GP Education, NIMDTA seeking: *"documentary evidence about training in [fluid management (and in particular hyponatraemia) and record keeping] prior to the death of Adam Strain (1995), and how training has changed between 1995 and Lucy Crawford's death (2000) and Raychel Ferguson's death in 2001. Furthermore, how has training changed since 2001?"*	
15.06.2005	Department's 'briefing session' for safety managers on the operation of the reporting and management arrangements established by PPM 06/04	
22.06.2005	E-Mail from David Cousins to Miriam McCarthy advising of the National Patient Safety Agency work plan in relation to hyponatraemia	Ref: WS-079/1, p.9
29.06.2005	E-mail from Terry McMurray to CMO in response to hers of 27th June 2005 seeking information on what Prof Jack McCluggage had done about fluid management and training. He states that: *"I wrote to all relevant training committees and clinical tutors for evidence about training over the last 20 years (as requested). To date I have had 12 replies from Paediatrics, the Medical Specialities, Sperrin-Lakeland (inl Tyrone County), the Mater, Antrim Area Hospital, Mid-Ulster, Newry and Mourne and the Ulster Hospital. As soon as I have an overall picture I will forward it to you"*	Ref: WS-075/1, p.31
27.07.2005	PSNI investigation into the circumstances of Adam's death begins	Ref: 093-001-001
29.08.2005	Dr. Terry McMurray (Chief Executive & Postgraduate Dean, NIMDTA) writes to Dr. Henrietta Campbell (CMO) providing a summary of the responses from the acute trusts on postgraduate training in fluid management, which showed: ▪ Altnagelvin Hospital – since 1995 lunchtime training for all PRHO & others on fluid and electrolyte management, since 2002 the Medical Director had developed a specific talk re hyponatraemia	

Date	Events (after Conor's death)	Reference
	▪ Craigavon Area Hospital – fluid management is part of the Induction Programme, hyponatraemia has been included since 2005 ▪ Erne Hospital – there was little documentation until 2003 when it became part of medical and paediatric training ▪ Royal - prior to 2001 "reasonably assured that fluid management was covered in induction programme", since 2001 there has been a specific lecture and induction pack	
September 2005	Postgraduate Medical Education & Training Board (which was established in 2003) began operations. It took over the responsibilities of the Specialist Training Authority of the Medical Royal Colleges and the Joint Committee on Postgraduate General Practice Training. Its responsibilities included: ▪ certifying doctors for the GP and specialist registers ▪ approving specialist training curricula and assessments submitted to it by the medical Royal Colleges ▪ quality assurance and evaluation of the management of postgraduate training	
October 2005	Regional Paediatric Fluid Therapy Working Group issue an Interim Report which provided an algorithm for Parenteral Fluid Therapy for children over 3 months old, and a fluid prescription sheet, incorporating assessment, calculation and reassessment.	
11.10.2005	SAC (Paediatrics) meeting held on 11.10.05: NPSA review of hyponatraemia	Ref: 320-059-003
2006	Department publishes 'Safety First: A Framework for Sustainable Improvement in the HPSS'	
February 2006	'Memorandum of Understanding: Investigating patient or client safety incidents (unexpected death or serious untoward harm)': between Health & Personal Social Services, PSNI, Coroners Service, Health & Safety Executive for Northern Ireland	
February 2006	Dr. Henrietta Campbell retires as CMO. She was replaced temporarily by Dr. Ian Carson in an acting capacity and then permanently by Dr. Michael McBride.	
14.03.2006	DHSSPS(NI) issues 'Quality Standards for Health and Social Care' to support the statutory duty of quality imposed on HPSS Boards and Trusts by The Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 Under 'Ensuring Safe Practice and the Appropriate Management of Risk' (para.5.3.1): *"promotion of safe practice on the use of medicines and products, particularly in areas of high risk, for example: … intravenous fluid management"* Under 'Preventing, Detecting, Communicating and Learning from Adverse Incidents and Near Misses' (para.5.3.2): *"(a) has systems and processes in place to prevent, identify, assess and manage and review adverse incidents and near misses across the spectrum of care and support … (c) has reporting systems in place to collate, analyse and learn from all adverse incidents, and near misses, share knowledge and prevent reoccurrence of adverse incident or near miss"* (emphasis added)	
20.03.2006	Department 'Reporting and follow up on serious adverse incidents' in relation to the new interim reporting procedures for adverse incidents and near misses introduced in July 2004 by PPM 06/04. The circular identified certain aspects of the process that needed to be managed more effectively, including (at para.4): (i) organisations reviewing their arrangements *"to ensure that incident management is co-ordinated and working effectively and that [the] designated senior manager is aware of those incidents reported to the Department as SAIs (serious adverse incidents)"*; (ii) *"Where an incident involves the death of a person every effort should be made to submit a report within 24 hours"* In addition, making certain changes to the SAI Report Proforma, including: *"Trusts and practices should note that all SAIs should be reported to their commissioning HSS Board as a matter of course. These reports will help inform HSS Boards with regard to meeting their statutory duty of quality on the services they commission providing an overview of the quality of service provision and, where appropriate, will facilitate regional learning"* (para.7, emphasis added)	Ref: HSS (PPM) 02/2006

Date	Events (after Conor's death)	Reference
28.03.2006	Trust formally report Claire's death to the Department's Quality & Performance Improvement Unit as a Serious Adverse Incident (SAI) under the arrangements outlined in the Interim Guidance HSS (PPM) 06/04. Dr. McBride, then Medical Director of the RBHSC, e-mailed Dr. Ian Carson, the Deputy CMO on the same day to inform him of the formal notification.	Ref: 322-070-001
April 2006	Dr. Miriam McCarthy retires as Senior Medical Officer	
21.04.2006	Acting CMO, Dr. Ian Carson, issues new guidelines: 'Parenteral Fluid Therapy Protocol.'	
24.04.2006	'How to Classify Adverse Incidents and Risk': Department's guidance for senior managers responsible for adverse incident reporting and management, which set out a flowchart for adverse incidents management, defined as: "*Any event or circumstance that could have or did lead to harm, loss or damage to people, property, environment or reputation*" (para.1.6)	
05.05.2006	**Claire's Inquest and Verdict on Inquest:** "*Cerebral Oedema due to menigo-enchephalitis, hyponatraemia due to excess ADH production and status epilepticus*"	Ref: 091-002-002
June 2006	NIRAAC and RMAG agreed by June 2006, to work together to establish a single focus for regional audit integrated with Northern Ireland clinical guidelines development.	
July 2006	Northern Ireland Audit and Guidelines Implementation Project established, under the leadership of Dr. Mock, Principal Medical Officer, DHSSPS and with representation from CREST, the audit bodies, the Department and the RQIA.	
11.07.2006	Department establishes formal links with NICE	
2007	National Patient Safety Agency issue Patient Safety Alert- Reducing the Risk of Hyponatraemia when Administering Intravenous Infusions to Children, recommending the use of 0.45% sodium chloride/ 5% glucose or 0.9% sodium chloride/ 5% glucose solutions as maintenance IV fluids in the paediatric population.	Ref: Hypotonic saline paediatric safety review.
28.03.2007	NHS National Patient Safety Agency Alert no.22 for 1month to 16 year olds, recommending that: "*NHS and independent sector organisations in England and Wales take the following actions by 30 September 2007 to minimise the risk of hyponatraemia in children:* *1**. Remove sodium chloride 0.18% with glucose 4% intravenous infusions from stock and general use in areas that treat children** … *2. Produce and disseminate clinical guidelines for the fluid management of paediatric patients …* *3. Provide adequate training and supervision for all staff involved in the prescribing, administering and monitoring of intravenous infusions for children* *4. Reinforce safer practice by reviewing and improving the design of existing intravenous fluid prescriptions and fluid balance charts for children* *5. **Promote the reporting of hospital acquired hyponatraemia incidents via local risk management reporting systems. Implement an audit programme to ensure NPSA recommendations are adhered to***" (Emphasis added)	Ref: NPSA/2007/22
01.04.2007	Five new integrated Health and Social Care Trusts established. They replaced the Trusts that had been in operation during the cases of all of the Children. The original Health and Social Services Boards remained in place until the introduction of the second phase in April 2009 which involved their replacement by the Health and Social Care Board. In addition, seven Local Commissioning Groups (LCGs) were created in April 2007 before being reduced to five with boundaries aligned to those of the Trusts in April 2009.	
27.04.2007	Joint letter from Dr. Michael McBride (Chief Medical Officer), Dr. Norman Morrow (Chief Pharmaceutical Officer) and Martin Bradley (Chief Nursing Officer) for action to: (i) Chief Executives of HSC Trusts; (ii) Chair – Regional Paediatric Fluid Therapy Working Group; (iii)	

Date	Events (after Conor's death)	Reference
	NI Medicines Governance Team; (iv) RQIA referring to NPSA Patient Safety Alert 22: Reducing the risk of Hyponatraemia when administering intravenous infusions to children and informing them that *"HSC organisations are **required to implement the actions identified in the Alert by 30 September 2007**. Independent sector providers which administer intravenous fluids to children will also wish to ensure that the actions specified in the alert are implemented in their organisations within the same time scale"* (Emphasis added)	
September 2007	Paediatric Parenteral Fluid Therapy (1 month – 16 years): initial management guideline	
16.10.2007	Circular HSC (SQS) 20/2007 issued with an addendum containing the Sep 2007 management guidelines for Paediatric Parenteral Fluid Therapy	
27.02.2008	Belfast Health & Social Care Trust: 'Adverse Incident Reporting Policy and Procedure including Adverse incident Investigation Procedure' This provided: ▪ Chief Executive (William McKee) as the 'accountable officer', is responsible for ensuring the Trust meets its statutory and legal requirements and adheres to the guidance issued by the DHSSPSNI to the Trust for the management of adverse incidents. The reporting on adverse incidents to the Trust Board and the setting of targets for safety and quality are delegated to the Medical Director ▪ Medical Director (Dr. Anthony Stevens) reports to the Senior Trust Board Team and Assurance Committee on all matters relating to adverse incidents and is to ensure: ▪ *"development of suitable organisational arrangements for the management of adverse incidents"* ▪ *"development and maintenance of systems to monitor and disseminate learning from adverse incidents across the organisation and when necessary externally"* ▪ *"**ensure reporting of incidents to external agencies as required e.g. DHSSPSNI**"* ▪ *"prioritisation of action to prevent adverse incidents/risks"* (p.5, emphasis added)	Ref: TPOO8/08
February 2008	RQIA: 'Review of Clinical & Social Care Governance Arrangements in Health & Social Care Trusts in Northern Ireland, Overview Report 2008	
February 2008	RQIA: 'Review of Clinical & Social Care Governance Arrangements in Health & Social Care Trusts in Northern Ireland, 2008 – Belfast Health & Social Care Trust	
February 2008	GAIN receives an application to fund an audit of IV fluid use in hospitalised children against the 2007 'Parenteral Fluid Therapy- Initial Management Guidelines.'	
March 2008	Poster-size wall charts of the Paediatric Parenteral Fluid Therapy guidelines printed and forwarded to HSC Trusts in March 2008.	
April 2008	RQIA Review Team submits its 'Summary Report following Validation Visits to Trusts and Independent Hospitals throughout Northern Ireland	
May 2008	CEMACH report 'Why Children Die', published	
30.05.2008	**It is announced at a public progress meeting of the Inquiry that Claire's death is to be included in its work**	
02.06.2008	E-mail from NIMDTA to all F1s and F2s as well as FPD and educational supervisors to ensure that all Foundation doctors complete an 'on-line learning module' (paediatric fluid therapy & reducing risk of hyponatraemia) as recommended by Dr. Maura Briscoe responsible for Safety & Quality Standards at DHSSPS	
20.06.2008	E-mail from NIMDTA to the Trusts forwarding the email of 2nd June 2008 and asking them to *"ensure your Foundation Trainees have completed [the module]"* – for which a link had been placed on the NIMDTA website	

Date	Events (after Conor's death)	Reference
September 2008	RQIA provides its full Report on 'Reducing the risk of Hyponatraemia when Administering Intravenous Fluids to Children'	
30.10.2008	Letter from the Inquiry Solicitor to Dr. Terry McMurray (Chief Executive, Postgraduate Dean NIMDTA) referring to: (i) the standard text on fluid management of Holliday & Segar (1957); (ii) March 2002 hyponatraemia guidelines; (iii) March 2007 National Patient Safety Agency's Patient Safety Alert No.22 'Reducing the risk of hyponatraemia when administering intravenous infusions to children'; (iv) September 2007 revised guidelines and seeking: *"information relating to the training provided to postgraduates in fluid management and hyponatraemia, with particular reference to children. It would also assist if you would cite any standard texts which were used, and if possible, provide me with details of any changes in fluid management education which may have occurred in the past 50 years, again with particular reference to the dates listed above. I would be grateful if you would highlight the extent to which the 2002 and 2007 publications (or similar) were incorporated into training programmes"*	
2009	King's College Hospital publish a study auditing the impact of Alert 22 on clinical practice.	Ref: Hypotonic saline Paediatric safety review.
21.01.2009	Health and Social Care (Reform) Act (Northern Ireland) 2009 passed. One of the express duties on the Department under the 2009 Act is to monitor and hold to account the Regional Board, Regional Agency, RBSO and HSC Trusts in the discharge of their functions.	
February 2009	Department writes to the Chief Executives of all HSC Trusts requiring confirmation not only of implementation of 'Alert 22' but all 16 recommendations made by RQIA on or before 30th April 2009.	
12.03.2009	Letter from Dr. Terry McMurray (Chief Executive, Postgraduate Dean NIMDTA) responding to the letter from the Inquiry Solicitor dated 30th October 2008	
April 2009	Patient and Client Council (PCC) established	
April 2009	NICE issue guidance on 'Vomiting Due to Gastroenteritis in Children Under 5' in April 2009	
2010	National Patient Safety Agency publish: 'National Framework for Reporting and Learning from Serious Incidents requiring Investigation'.	
2010	Title of the Paediatric Parenteral Fluid Therapy wall chart was amended to "Parenteral Fluid Therapy for Children & Young Persons (aged over 4 weeks & under 16 years)" to clarify age limits as an adjunct to the publication by GAIN of its own guidance on Hyponatraemia in Adults (i.e. those on or after 16th birthday).	
12.02.2010	Department endorse NICE issued guidance on 'Vomiting Due to Gastroenteritis in Children Under 5' subject to the caveat that "Where this guidance refers to the management of IV fluids, clinicians should apply the guidance in the wall chart on Parenteral Fluid Therapy for Children and Young Persons aged Over 4 Weeks and Under 16 Years."	
24.02.2010	Francis Report: 'Independent Inquiry into care provided by Mid Staffordshire NHS Foundation Trust January 2005 – March 2009'	London: Stationery Office (HC375-1)
April 2010	Health & Social Care Board: 'Procedure for the Reporting and Follow up of Serious Adverse Incidents'	
May 2010	RQIA Review Team conducts a follow-up review and publishes its second report - 'Report of actions taken by HSC Trusts and Independent Hospitals to implement Recommendations made in the Report: Reducing the Risk of Hyponatraemia when Administering Intravenous Fluids to Children' (RQIA, June 2008)'. They found that Solution No.18 had now been completely removed from all clinical areas where children were being treated. The Review Team concluded that Trusts and independent healthcare facilities in Northern	Ref: 303-031-415

Date	Events (after Conor's death)	Reference
	Ireland have good operational control of the administration of intravenous fluids to children and compliance with NPSA 'Alert 22' had been substantially achieved.	
27.05.2010	GMC find no evidence that Dr Henrietta Campbell was involved in a *"deliberate cover-up of medical malpractice or negligence", but that" she handled [her] television interviews inappropriately and that the answers that she gave during the interviews were certainly open to misinterpretation"*. These failures were not sufficiently serious to warrant further action. The case was closed.	
June 2010	National Institute for Health and Clinical Excellence publish guidance recommending the use of intravenous fluids in children with raised intracranial pressure and increased ADH secretion.	Ref: Hypotonic saline Paediatric safety review
2011	GAIN decide to commission a further 'snapshot audit' of compliance with the revised wall-chart guidance.	
13.07.2011	Following the hearing of a Conduct and Competence panel of the NMC from 11th to 13th July 2011, an Interim Suspension Order of 18months is made against Nurse Ruth Bullas in relation to her care of Conor on 8th May 2003	Ref: 303-025-344
September 2011	CMOs of the UK decide that Dr. McBride (the NI CMO) should write to the Chief Executive of NICE, Sir Andrew Dillon, to request that it consider developing UK guidance on IV fluid therapy for children. He wrote on 20th September 2011 and followed it up with a letter to Professor Sir Bruce Keogh, NHS Medical Director and co-chair of the National Quality Board, to draw the request to his attention.	
28.09.2011	New process for the endorsement, implementation, monitoring and assurance of NICE Technology Appraisals and Clinical Guidelines in Northern Ireland comes into effect and is set out in circular HSC (SQSD) 04/11.	
29.12.2011	Professor Sir Bruce Keogh advises the CMO that the topic of IV fluids in children would be referred to NICE.	
March 2012	Dr. Julian Johnston of the Belfast HSC Trust advises the Department of on-going work between Trusts to develop uniform fluid prescription and balance chart (one variant for adults and one for children) for use on a regional basis.	
01.06.2012	Key functions of the NPSA transferred to the NHS Commissioning Board Special Health Authority	
October 2012	NIAO report on "The Safety of Services Provided by Health & Social Care Trusts" This found: ▪ Levels of incident reporting are increasing, however these still fall short of what is expected, particularly in hospitals ▪ There is no incident monitoring system that collates patient safety data across the entire HSC sector ▪ Regional sharing of lessons learned has not been as structured or comprehensive as it could be	
November 2012	Public Account Committee of the NI Assembly meets to discuss NIAO report	
December 2012	RQIA carry out a review entitled "Baseline Assessment of the Care of Children under 18 admitted to Adult Wards in Northern Ireland".	Ref: WS-077/4, p.13
2013	As a result of the findings of the GAIN audit of IV fluid use in hospitalised children, and in the light of technological advances in glucose testing, the Paediatric Parenteral Fluid Therapy wall chart was amended again. The charts were re-printed and re-issued to Trusts, but due to an error in the title, the chart had to be further re-issued in July 2013. It was accompanied by template prescription and fluid balance charts and a training package, as has become standard.	

Date	Events (after Conor's death)	Reference
01.08.2013	CMO and CNO issue a circular to the HSC (HSS (MD) 30/2013) publishing and endorsing the use of standard fluid charts and requesting that Chief Executives make resources available to train staff.	Ref: 329-020a-221
30.08.2013	Admission of liability in Raychel's case by Altnagelvin Trust	
26.09.2013	Letter of claim served in Claire's case	
16.10.2013	Letter in reply from Trust admitting liability in Claire's case	
17.10.2013	Announcement at Oral Hearings of acceptance of liability and apology in all of the children's cases	