Witness Statement Ref. No. 247/1

NAME OF CHILD: Claire Roberts

Name: Meenakshi Mirakhur

Title: Dr

Present position and institution: Retired (December 2010)

Previous position and institution:
[As at the time of the child's death]
Consultant Neuropathologist, Royal Hospitals Trust (now Belfast Health and Social Care Trust)

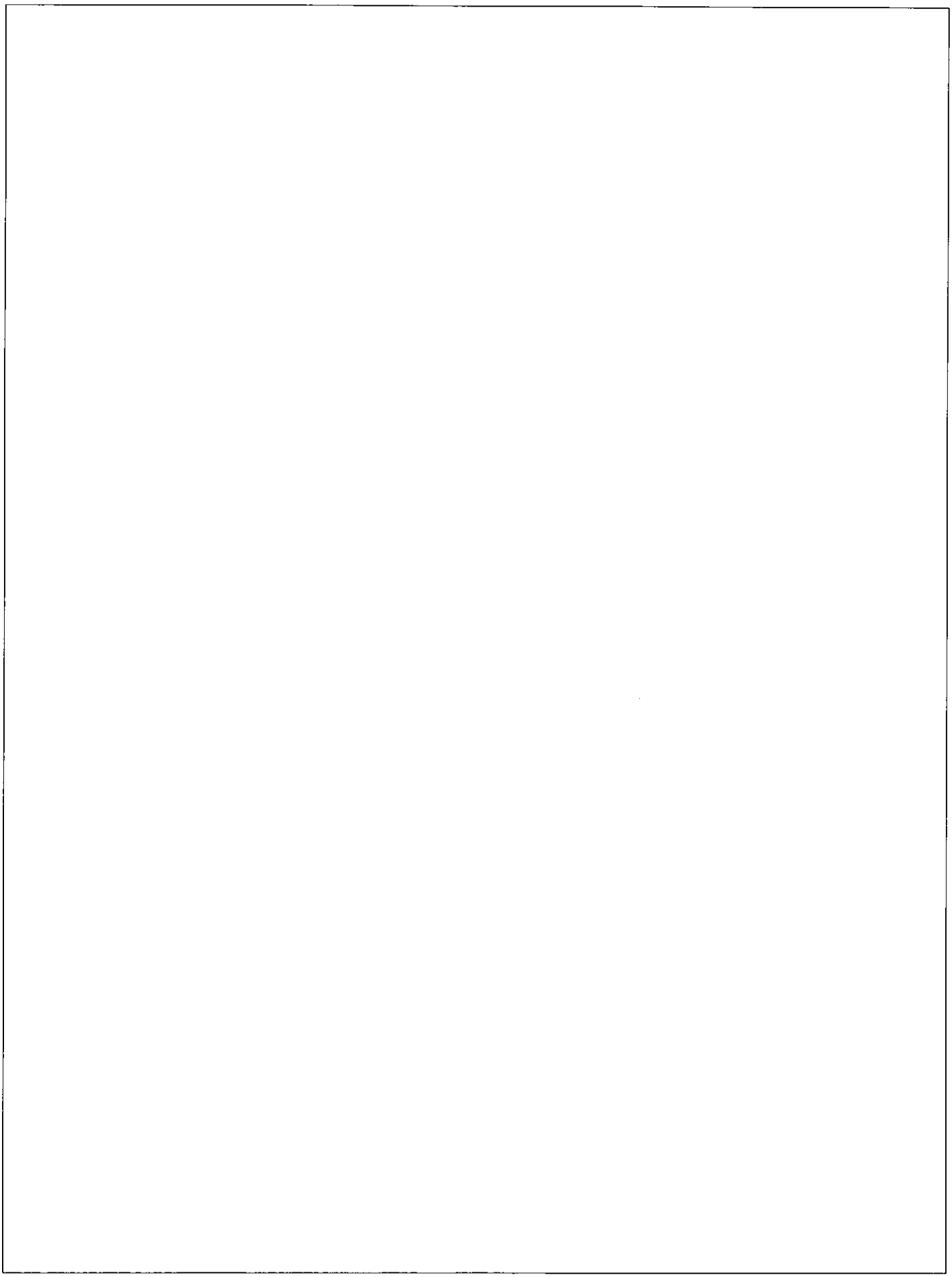
Membership of Advisory Panels and Committees:
[Identify by date and title all of those between January 1995 and April 2012]
Executive Committee Member, British Neuropathological Society: 2000-2010
Treasurer, British Neuropathological Society: 2006-2010

Previous Statements, Depositions and Reports:
[Identify by date and title all of those made in relation to the child's death]

Witness statement Ref No: 223/1

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

Ref:	Date:	



IMPORTANT INSTRUCTIONS FOR ANSWERING:

Please attach additional sheets if more space is required. Please identify clearly any document to which you refer or rely upon for your answer. If the document has an Inquiry reference number, e.g. Ref: 049-001-001 which is 'Chart No.1 Old Notes', then please provide that number.

If the document does not have an Inquiry reference number, then please provide a copy of the document attached to your statement.

I. QUERIES ARISING OUT OF CLAIRE ROBERTS' AUTOPSY AND AUTOPSY REPORT

Please provide clarification and/or further information in respect of the following:

(1) State the date when you were first appointed as a Consultant Neuropathologist by the Department of Neuropathology, Institute of Pathology and describe your experience as a Neuropathologist in the Department of Neuropathology and any other department/hospital in which you worked prior to 21st October 1996.

Appointed as Consultant Neuropathologist in February 1988. I worked as a full-time Neuropathologist involved in service-related work, teaching and research. I was appointed Head of Neuropathology in April 1997 and remained so till I retired in December 2010

(2) Describe your work commitments to Department of Pathology, particularly over the period 21st October 1996 to 11th February 1997.

My work commitment involved reporting on biopsies/tissue samples obtained for diagnosis of patients suffering from neurological disorders. I also performed autopsies on such patients who died. The latter involved both hospital and coroner's autopsies, and referrals from paediatric and forensic services

(3) Describe your involvement in :

(a) Claire's autopsy: I was part of the team with Dr Herron and Professor Ingrid Allen in Neuropathology. Prof Allen retired in April 1997 and I cannot recall if she was involved in this case. Only Dr Herron and I were involved in the preparation of the final report.

(b) Claire's autopsy report dated 11th February 1997 (Ref: 090-003-003). See (a) above

Including:

(i) State the nature of your involvement including what procedures / examinations / tests you carried out and when you carried them out.:

As stated above, part of the team as Consultant neuropathologist

(ii) State the date when you first became involved, how and in what capacity.:

I was aware of the case as part of the team as Consultant neuropathologist.

(iii) If you were not involved in Claire's autopsy until after 24th October 1996, explain why your involvement commenced later and whether this was a common/normal occurrence and state the reasons for your answer.:

I was involved as part of the team

(iv) If you were involved in Claire's autopsy, state the date/s when you carried out Claire Roberts' autopsy.:

I was involved as part of the team

(v) Identify all notes and records of your involvement and furnish copies thereof.:

Autopsy report and laboratory documents already submitted; I have no other documents

(4) Describe the purpose of Claire's autopsy and what the autopsy was investigating, and state the reasons for your answer.

Purpose of the autopsy was to identify the cause of death

(5) Identify ay other persons who were involved in Claire's autopsy and autopsy report, and the nature and dates of their involvement, when they ceased to be involved and why and all notes and records relating to the involvement of those persons.

(a) In particular describe Dr. Brian Herron's involvement in :

Dr Herron was a registrar in the Neuropathology Dept at the time of autopsy. He was part of the team carrying out the autopsy and examined the brain in detail for the purpose of identifying the cause of death and the subsequent autopsy report

(i) Claire's autopsy including what procedures / examinations / tests he carried out and when he carried them out.: see above

(ii) Claire's autopsy report. See above

(b) Identify who created the histological slides, and when and where those slides were prepared and stained and furnish copies of all documents relating to the histology in Claire's case.

The team (Dr Herron and myself) created the slides which were prepared and stained in the Neuropathology Laboratory. Documents including the autopsy report have already been furnished

(c) Identify who took any CSF samples and state when and where they were taken.

Dr Herron took the CSF sample at the time of autopsy

(6) State whether there was a *"review session at 1.45pm on the day of the autopsy"* as described on the autopsy request form (Ref: 090-054-184) and:

(a) If so, state when and where it was held, who was present and the outcome thereof, and produce any note, record or document relating thereto.

There was no review session

(b) If not, explain why not.

Review sessions were not held routinely

(c) State whether in 1996 there would usually have been a review session on the day of autopsy, and if so, state the purpose thereof, who would usually attend and what record of that session would normally be made.

See (b) above.

(7) In relation to the document entitled *"Provisional Anatomical Summary"* (Ref: 090-005-007):

(a) State whether you are the author of the document entitled *"Provisional Anatomical Summary"* (Ref: 090-005-007). If you are not the author, please identify the author thereof.

Dr Herron was the author of the provisional anatomical summary

(b) Explain why Dr. Herron's grade of Senior Registrar was not disclosed in Claire's *"Provisional Anatomical Summary"*.

It was not the normal practice

(i) State whether a Senior Registrar's grade would normally have been disclosed in a *"Provisional Anatomical Summary"* in 1996.

No

(c) Identify the signature on that document. (Ref: 090-005-007).

It is Dr Herron's signature

(d) State the date of the document entitled *"Provisional Anatomical Summary"* (Ref: 090-005-007).

I have no knowledge

(e) State whether that document is complete and state the reasons for your answer. If it is not complete, please furnish a copy of the complete document.

It is the provisional anatomical summary based on naked eye examination findings. The complete document has already been furnished as the final autopsy report.

(f) Identify the source of the information on that document that Claire's *"Date of Admission"* was *"22/10/96"*.

From clinical summary supplied to the pathologist.

(g) Identify the source of the information on that document that the *"Time of Death"* was *"6.25hrs"*, and explain whether that refers to 06.25hrs or 18.25hrs.

As the autopsy request form indicates that the brain stem death criteria were fulfilled at 18.15hrs, the time is probably 18.25hrs

(h) Identify the source of the information on that document that the clinicians responsible for Claire were *"Dr.Webb/Dr. Steen"*.

From the autopsy request form

(i) Identify the source of the information that Claire had *"History of acute encephalopathy"*.

I cannot recall this

(j) State whether Claire's medical notes, records, CT scan and chest X-rays were available to be examined either at the time document was produced or thereafter. If you cannot recall, please state whether they were likely/normally available and if so, for what purpose.

I cannot recall but they may sometimes be available as part of clinical notes of the patient.

(8) Please identify the author of the Autopsy Report dated 11th February 1997 in relation to Claire Roberts (Ref: 090-003-003).

Although Dr Brian Herron's name is mentioned on the autopsy report, the report was produced jointly by us.

(a) If you were the author of that Autopsy Report, explain why your name is not stated as the pathologist in the report itself.

It was not usual to put in the Consultant's name if the autopsy was carried out by a person of the status of a Senior Registrar who also drafted the report. I supervised Dr Herron as part of the team.

(b) Explain why *"Dr. Herron"* is noted as the Pathologist on the report. (Ref: 090-003-003)

Dr Herron and I were the part of the same team

(i) Explain why Dr. Herron's grade of Senior Registrar was not disclosed in Claire's autopsy report.

It was not the usual practice

(ii) State whether a Senior Registrar's grade would normally have been disclosed in a paediatric autopsy report in 1996.

It was not the usual practice

(c) Explain why this Report is not signed by the author.

I cannot recall why it was not signed although it is the usual practice to sign such reports.

(d) State whether in 1996 and 1997 a paediatric Autopsy Report would usually/normally have been signed, and if so, by whom. If not, explain why not.

It would usually be signed by the author of the report

(e) State specifically which findings in the autopsy report are:

(i) Your findings; Dr Herron and I reported jointly

(ii) The findings of Dr. Brian Herron : Dr Herron and I reported jointly

(iii) The findings of any other person, and identify that person. I cannot recall

(f) Describe any discussions you had regarding Claire's autopsy with Dr. Brian Herron prior to completing the autopsy report. If so, identify who else was present and state when they took place, their content and where they are recorded.

I cannot recall.

(g) If you were the author of Claire's Autopsy Report, explain why the Coroner was not notified that you authored the report at the time of Claire's Inquest.

I was not notified by the coroner regarding the Inquest.

(h) Explain why Dr. Brian Herron delivered the pathological findings of Claire's autopsy at the Inquest.

His name was on the report and he was a Consultant by the time of the inquest.

(i) If you were the author of Claire's Autopsy Report:

(i) State when you first became aware of this, and particularly between 2004 and the present day

I was made aware of the case when I received the witness statement in April 2012

(ii) State how you first became aware of this, in what circumstances this was discovered, and if you were informed, who informed you of this and when were you so informed.

See (i) above

(9) Please identify all notes, records, photographs and images relating to Claire's autopsy that you made or were made on your instruction and provide a copy of them.

Any records, photographs or images that may have been made should be in the Department and are not in my possession

(a) State whether you took any photographs during Claire's autopsy, specify when, and explain what you photographed and why. Please furnish copies thereof.

It is not routine practice for us to take photographs of the body but photographs are taken of the brain as part of medical records.

(10) State how you first became aware of the death of Claire, from whom and when you found out this information.

I cannot recall

(11) *"Clinician: Dr Webb / Dr Steen"* (Ref: 090-003-003)

(a) State whether you had any communications about Claire's case with:

(i) Dr Webb I cannot recall

(ii) Dr Steen I cannot recall

(iii) Any other person I cannot recall

prior to completing the autopsy report. If so, identify with whom you had those communications and who else was present and state when they took place, their content and where they are recorded.

(b) Explain what, if anything, you did, or if you cannot recall, what you likely/normally would have done, in 1996 and 1997 to ensure that any information or guidance from the clinicians relating to Claire's or any other case was accurate and impartial, particularly where there may have been an issue over the conduct of the clinicians and their involvement in the child's death.

Pathologists are entirely reliant on the information supplied by the clinicians as it is the clinicians who have looked after Claire. The pathologist is not involved in the patient care. The pathologist would not carry out an investigation to check if the information supplied by the clinicians is correct.

(c) Identify who you considered to be the clinician in Claire's case with primary responsibility for her care and treatment between her admission to RBHSC and her death. Explain your reasons why.

The names of Dr Webb and Dr Steen are mentioned on the autopsy request form

(12) *"Date of Admission: 22/10/96 ...*

Time of Death: 6.25 hrs" (Ref: 090-003-003)

(a) Identify the source of your statement that the date of Claire's admission was *"22/10/96"*.

Autopsy request form

(b) Identify the source of your statement that the time of death was *"6.25 hrs"* and explain whether you mean 06.25hrs or 18.25 hrs.

The autopsy request form indicates that the brain stem death criteria were fulfilled at 18.15hrs, the time is probably 18.25hrs

(13) *"Date of Necropsy: 24/10/96*

Time of Necropsy: 11:30am

11/2/97" (Ref: 090-003-003, 090-003-005)

(a) State the date and time when you removed Claire's brain for examination.

The brain removal only autopsy was carried out on 24.10.1996 at 11.30 am.

(i) State whether you measured Claire's fresh brain weight, and if so, state that weight. If not, explain why not.

In paediatric cases, the brain is extremely soft and fragile and therefore is not usually weighed in the fresh state.

(b) State the date and time when you first cut Claire's brain after fixation.

The brain was cut and examined in the fixed state on 28.11.1996 (according to laboratory documents); the exact time is not recorded.

(c) State whether you created any histology slides of Claire's brain, and if state the date, time and location when you did so.

Tissue samples for histology were taken at the same time in the Dept of Neuropathology as the brain was cut; the exact time is not recorded.

(d) Explain why it took between 23rd October 1996 and 11th February 1997 to complete Claire's post mortem report.

The brain could take up to several weeks to achieve adequate fixation in paediatric cases to enable it to be examined in detail; also, a detailed workup is required due to complex nature of the organ itself

(e) State what would have been the normal or average period of time in October 1996 between a paediatric patient dying and the results of the post mortem being available.

It varies from case to case depending upon the age of the patient and the complexity of the case. In particular, the examination of the brain takes a longer time due to requiring fixation.

(14) *"CLINICAL SUMMARY"* (Ref: 090-003-003)

(a) Please identify and furnish a copy of the *'Clinical Summary'* in relation to Claire that was provided to you prior to the post mortem and identify its author. If there was no document explain the source of your information for the *'Clinical Summary'* of Claire's case. If there was such a document but you no longer have it, then describe its contents and explain what has happened to it.

Autopsy request form has already been furnished

(b) State whether you had Claire's medical notes available to you for the post-mortem. If so, state the information you gained from them. If not, explain why not.

I cannot recall

(c) Explain what you mean by *"there was a query of inappropriate ADH secretion"*. Specify whether, and if so, to what extent, you consider it caused or contributed to Claire's cerebral oedema and/or death and explain the reasons for your answer.

This is a clinician's statement

(d) State what you mean by *"iatrogenic"* epilepsy.

This is a clinician's statement

(15) *"BRAIN DESCRIPTION"* (Ref: 090-003-004)

(a) State the date and time when you weighed and recorded Claire's brain for your record of *"fixed brain weighs 1606g"*.

28.11.1996; time is not recorded

(b) State the average/"standard" brain weight for a girl of Claire's age.

1150-1300 gm

(c) Explain the significance of and reason/s for Claire's fixed brain weight of 1606g.

It may have indicated brain swelling

(d) Describe the degree and distribution of the *"symmetrical brain swelling with effacement of gyri"* (Ref: 090-003-004) and the significance thereof in relation to:

This is on the naked eye examination of the whole brain prior to sectioning and indicates brain swelling

(i) Hyponatraemia may be one of the causes

(ii) Any other diagnosis brain swelling is not specific to hyponatraemia only

(e) Describe the degree and distribution of the *"diffuse brain swelling" "[o]n sectioning the brain"* (Ref: 090-003-004) and the significance thereof in relation to:

(i) Hyponatraemia see above

(ii) Any other diagnosis see above

(16) *"COMMENT:*

In summary, the features here are those of cerebral oedema with neuronal migrational defect and a low grade subacute meninoencephalitis." (Ref: 090-003-005).

(a) Explain what you mean by *"low grade"*. It was not florid or severe

(b) Explain what you mean by *"subacute"*. It is more than a few hours old

(c) Specify the evidence you found of *"a low grade subacute meninoencephalitis"*.

Small collections of inflammatory cells, chiefly mononeuclear cells in the coverings of brain and in the brain substance.

(d) In light of the degree of brain swelling noted clinically (including papilloedema and CT scan), state what evidence of encephalitis, meningo-encephalitis or meningitis you would have expected to have been evident by 24th October 1996 or in Claire's post mortem, and explain the basis for your answer.

Increase in brain weight, some effacement of gyri on naked eye examination and inflammation of the brain on histopathological examination

(17) *"No other discrete lesion has been identified to explain epileptic seizures"*. (Ref: 090-003-005).

(a) Specify all neuropathological sequelae of status epilepticus present. See (b) below

(b) If Claire had been in status epilepticus since her admission or the morning of 22nd October 1996, specify all neuropathological sequelae of status epilepticus which you would have expected to observe.

There may not be any structural changes in the brain. Changes if present, are usually not specific but may include brain swelling and cellular damage

(c) State whether you would have expected to observe damage to the hippocampus in Claire's case, and explain the reasons why. Specify whether you did note any such damage in the autopsy and explain the significance of the presence/absence of such damage.

There may or may not be any changes. Autopsy report states that there was some neuronal damage

(18) *"The reaction in the meninges and cortex is suggestive of a viral aetiology ..."* (Ref: 090-003-005)

(a) Specify the *"reaction in the meninges and cortex"* to which you refer.

Cellular reaction around blood vessels in meninges and cortex

(b) Explain why that reaction *"is suggestive of a viral aetiology"*.

Presence of mononuclear cells around blood vessels in meninges and cortex and viral aetiology is one of the causes

(19) *"...though a metabolic cause cannot be entirely excluded."* (Ref: 090-003-005)

(a) Identify the *"metabolic cause[s]"* which *"cannot be entirely excluded"* and explain the reasons for your answer. (Ref: 090-003-005).

It is usually not possible to exclude these as there are no specific structural lesions in the brain related to biochemical derangements.

(20) *"As this was a brain only autopsy, it is not possible to comment on other systemic pathology in the general organs."* (Ref: 090-003-005)

(a) State how you were first asked to perform a limited *"brain only autopsy"*, and from whom and when you found out this information.

Detailed as per the autopsy request form (already furnished)

(b) Explain why a limited *"brain only autopsy"* was requested in Claire's case, who had responsibility for making this decision and when this decision was made.

Clinician's decision in consultation with the family

(c) State whether you discussed with anyone:

(i) the decision to limit the scope of the autopsy with anyone

This is not the decision of the pathologist. Please refer to 20(b) above

(ii) whether the Coroner should be informed of the decision to limit the scope of the autopsy before proceeding.

Please see (i) above

If so, state the nature and outcome of any discussion, and when and with whom you discussed it. If you did not, explain why.

(d) State whether on reflection, the Coroner should have been informed of the decision to limit the scope of the autopsy before proceeding. Explain the reasons for your answer.

Autopsy was carried out in 1996 on the basis of information available at that time.

(e) State whether in the light of your findings, you would have preferred to have had the opportunity to carry out a full autopsy. Explain the reasons for your decision.

Clinicians usually with the family, make this decision

(21) Explain the meaning and the significance of the presence of each of the following during Claire's autopsy:

(a) *"Subacute inflammation meninges in perivascular space"* (Ref: 090-003-003)

Small amount of cellular reaction around the blood vessels in the meninges (coverings of the brain), indicating a possible infection or reaction.

(b) *"Neuronal migration disorder"*(Ref: 090-003-003)

When the neurons are present in certain areas of the brain from where they should have migrated as happens in babies in early childhood; this may indicate a possible delay in development.

(c) *"Symmetrical brain swelling"* (Ref: 090-003-004)

Both hemispheres of the brain are swollen equally indicating a generalized disorder

(d) *"Effacement of gyri"* (Ref: 090-003-004)

Narrowing of the space between brain convolutions indicating generalised brain swelling

(e) *"Uncal prominence"* (Ref: 090-003-004)

Swelling of the uncus (part of the brain) indicates a pressure effect due to brain swelling

(f) *"Diffuse brain swelling"* on sectioning of the brain (Ref: 090-003-004)

All parts of the brain are affected

(g) *"White matter swelling with effacement of the IIIrd ventricle"* on sectioning of the brain (Ref: 090-003-004)

Swelling of the deeper structures of the brain with narrowing of the brain cavities indicates generalized brain swelling

(h) *"Unremarkable" "cerellum"*. (Ref: 090-003-004)

No specific changes in cerebellum

(i) *"Focal meningeal thickening, and a cellular reaction in the meninges and perivascular space in the underlying cortex"* and *"in the deep white matter focal collections of neurones are present arranged in a haphazard manner"* in the histology of the cortex and white matter (Ref: 090-003-004)

Prominence of coverings of the brain (meninges) and collection of inflammatory cells within the coverings around the blood vessels and in the deeper layers beneath the coverings (cortex). Small number of misplaced neurons in an irregular manner on histological examination. This indicates inflammation of the brain coverings and the underlying brain matter and underlying development anomaly (see 21(b)).

(j) *"Generally good neuronal preservation"* in the histology of the basal ganglia (Ref: 090-003-004)

No specific damage to nerve cells

(k) *"Focal collections of neuroblasts in the subependymal zone suggestive of a migration problem... generally good neuronal preservation... in the periventricular grey matter and mammillary bodies... small foci of necrosis... in the periventricular grey matter which are probably a consequence of cerebral oedema"* in the histology of the perventricular grey matter, hypothalamus and mammillary bodies (Ref: 090-003-004)

Small number of neurons in the areas around the ependyma (lining of brain cavity) in the white matter. Small foci of neuronal damage in the deeper grey matter, probably a consequence of ischaemia (reduction in blood supply) due to swelling of the brain.

(l) *"Some rarefaction and occasional ischaemic neurones ...in the pyramidal cell layer"* in the histology of the hippocampi (Ref: 090-003-004)

This is a non-specific response to cerebral oedema

(m) *"Dentate nuclei are preserved"* in the histology of the cerebellum (Ref: 090-003-005)

Collection of neurons in cerebellum is preserved

(n) *"Focal haemorrhagic necrosis"* in the histology of the brain stem (Ref: 090-003-005)

Some neurons in the brain stem show necrosis and this is suggestive of pressure effect

(o) *"Neuronal migrational defect"* (Ref: 090-003-005)

In intrauterine life the neurons migrate from around the deeper structures (subependymal) to form outer cortical layers. However, small numbers can be expected around the deeper structures in newborns but this may suggest a migration disorder (developmental anomaly) for a child of this age.

(22) Explain the meaning and the significance of the <u>absence</u> of each of the following during Claire's autopsy:

This question does not specify whether the requested findings are on naked eye examination or on microscopic examination.

(a) *"Cortical venous thrombosis"* (Ref:090-003-004)

Clot in the venous system. No clot was identified in this case

(b) *"Meningeal exudate"* (Ref:090-003-004)

Inflammation of the meninges (coverings of the brain); this was not obvious from naked eye examination

(c) *"Necrosis"* (Ref:090-003-004)

Cell damage- not identified in the uncus on naked eye examination

(d) *"Evidence of cortical necrosis, either laminar or focal"* on sectioning the brain (Ref: 090-003-004)

Cell damage in cortex (brain matter) either in all layers (laminar) or localised (focal)

(e) *"Evidence of shi1ft at the midline"* on sectioning the brain (Ref: 090-003-004)

Presence of pressure effect resulting in movement of the mid-line structures, not present in this case, indicating absence of any space occupying lesion such as a tumour

(f) *"Evidence of necrosis"* in the *"paraventricular structures including the mammillary bodies"* on sectioning the brain (Ref: 090-003-004)

Cell damage in the deeper structures around the cavities of the brain (para-ventricular and mamillary bodies), no such findings in this case

(g) *"Basal ganglia or diencephalon lesion"* on sectioning the brain(Ref: 090-003-004)

These are deeper structures which are composed of groups of nerve cells, not affected in this case

(h) *"Evidence of brain stem haemorrhage to suggest Leigh's disease"* on sectioning the brain stem (Ref: 090-003-004)

Focal haemorrhages in midbrain or pons, the structures between the brain and the spinal cord- no evidence of Leigh's disease in this case as the pattern of the haemorrhages is different

(i) *"Cortical necrosis"* in the histology of the cortex and white matter (Ref:090-003-004)

Cell damage in the cortex or white matter which was not present in this case

(j) *"Pigmentation or calcification"* in the histology of the basal ganglia (Ref: 090-003-004)

Collection of pigment in the nerve cells or calcium deposition (calcification) indicating absence of long standing damage

(k) *"Vascular proliferation... in the perventricular grey matter and mammillary bodies"* (Ref: 090-003-004)

Increase in the number of blood vessels and increase in the cells lining the blood vessels, not identified in this case

(l) *"Displaced neurones or Ammon's horn sclerosis.."* in the histology of the hippocampi (Ref: 090-003-004)

Nerve cells which are not in the normal anatomical position (displaced). Ammon's horn sclerosis is scarring in the vulnerable area of the brain- not present in this case

(m) Identification of a tumour in the histology of the hippocampi (Ref: 090-003-004)

No tumour present in this location indicating that changes in the brain were not due to a tumour

(n) *"Significant cell loss in Purkinje cell or granule cell layer...cerebellar cortical dysplasia"* in the histology of the cerebellum (Ref: 090-003-005)

These are different cell layers of cerebellum, each layer is composed of groups of nerve cells Cerebellar cortical dysplasia is a malformation of groups of nerve cells in cerebellum. This was not identified in this case indicating absence of a development disorder in the cerebellum.

(o) *"Myelinolysis"* in the histology of the brain stem (Ref: 090-003-005)

Dissolution of myelin which is the protein covering of the nerve cell processes and helps in the conduction of nerve impulses; myelonolysis may indicate a metabolic disorder.

(p) *"Discrete lesion ...to explain epileptic seizures"* (Ref: 090-003-005)

No structural localised lesion such as a pre-existing tumour which may cause epilepsy, not identified in this case

(q) Identification of *"other structural lesion in the brain like corpus callosal or other malformations"* (Ref: 090-003-005)

Identification of lesions in corpus callosum (bundle of tracts which connects the two cerebral hemispheres). Malformations are usually birth defects.

(23) Explain why "hyponatraemia" was not mentioned in Claire's autopsy report.

No specific structural change attributed to hyponatraemia

(24) State what medical notes and records you examined before:

(a) Commencing Claire's autopsy - I cannot recall

(b) Writing Claire's autopsy report - I cannot recall

If you are unable to recall, state what medical notes and records you would usually/likely have examined before (a) and (b) above in 1996 and 1997.

Autopsy request form and relevant medical notes

(25) If you would not have considered all of Claire's medical notes and records of her care and treatment between 21st October and 23rd October 1996, explain why. I cannot recall

(26) State whether there were any protocols/guidelines/practices/procedures for:

(a) Considering medical notes and records prior to commencing an autopsy and

There were no established guidelines; clinicians would be contacted for any clarifications

(b) Conducting an autopsy.

Royal College of Pathologists guidelines, copies relevant to that time period may be available from the Department or from the Royal College of Pathologists. I have not personally retained copies of these.

And if so, identify them and furnish copies thereof.

(27) State whether you were aware at the time of the autopsy of the findings of the chest x-ray (Ref: 090-033-115). If so, state whether you took the chest x-ray into account in your autopsy findings and if so, state how and explain why. If not, state whether you would have altered your autopsy report in light of that chest x-ray, and if so, state how and explain why.

I cannot recall

(a) In particular, state whether the knowledge of the chest x-ray ought to have led to a further post mortem examination including examination of the lungs in order to ascertain the likely sequence of events leading to Claire's death.

Autopsy was guided by the clinician's request and the consent.

(b) State whether lung disease can provoke SIADH.

I cannot comment on this

(28) State whether it is possible that Claire did not have encephalitis in all the circumstances, and if so, what would have been the cause of death in those circumstances.

The autopsy findings in this case are suggestive of encephalitis. However, a metabolic cause cannot be excluded due to the presence of generalised brain swelling.

(a) State whether it is possible that encephalitis played no part in Claire's cerebral oedema and/or death, and the reasons why.

It is difficult to say.

(29) State whether it is possible that Claire did not suffer from status epilepticus between her admission on 21st October 1996 and her death, and if so, what would have been the cause of death in those circumstances.

This is outside my area of expertise

(a) State whether it is possible that epilepsy played no part in Claire's cerebral oedema and/or death, and the reasons why. Please see (29) above

(30) State whether the pulmonary abnormality identified on the chest X-ray (Ref: 090-033-115) would likely have occurred:

(a) Before This is outside my area of expertise

(b) As a result of and/or This is outside my area of expertise

(c) After This is outside my area of expertise

Claire's respiratory arrest at approximately 02.30 on 23rd October 1996. Please explain the reasons for your answer and the significance of that abnormality.

This is outside my expertise

(31) State whether you were aware of the post mortem cerebral spinal fluid analysis (Ref: 090-030-095) when you were compiling your autopsy report. I cannot recall

(a) If not, explain why you were not aware of this analysis, and comment on whether these results would have had any impact on your findings in your autopsy report, and what that impact. See (31) above

(32) Explain the meaning and significance of the post mortem cerebral spinal fluid (CSF) analysis (Ref: 090-030-095), and, in particular, the following results:

All below signify mixture with blood, this can happen while a post-mortem examination is being carried out. This does not necessarily signify that blood was present in the CSF before the post-mortem examination.

(a) The cerebro-spinal fluid appeared *"bloodstained"*

(b) Protein of *"95.0"* g/L

(c) Leucocytes of *"4,000"* cells/uL

(d) The ratio of erythrocytes to leucocytes (300,000:4,000)

(33) State whether the post mortem leucocyte count of *"4,000"* cells/uL shown in the CSF analysis (Ref: 090-030-095) could be attributed to death related changes. If so, state to what extent this can be attributed and explain the reasons for your answer.

This can be a post-mortem effect

(34) State whether you were aware of the initial haematology analysis taken on Claire's admission to Royal Belfast Hospital for Sick Children (RBHSC) on the evening of 21st October 1996, and in particular, the leucocytes result of *"16.52"* (Ref: 090-032-108). If you were not aware of it, please comment on these results and any significance they have for Claire's autopsy report.

I cannot recall

(35) Describe any discussions between 1996 and 2006 in relation to any request/s for information relating to Claire's autopsy report or attending Claire's Inquest, and state the date and nature of each conversation, the parties to each discussion and any record of each discussion.

I cannot recall. Also, I was not asked to attend the Inquest.

III. ADDITIONAL QUERIES

(36) Please identify the documents in your possession, custody or control relating to Claire's Roberts, and furnish copies thereof.

I do not have any documents in my possession other than the consent form, the autopsy request form, the autopsy report, and the laboratory work up, the copies of which have already been furnished.

(37) Identify the Consultant Neuropathologist who supervised Dr. Brian Herron's work between October 1996 and his employment as a Consultant.

Professor I Allen and myself until 1997 after which it was only myself as Professor Allen retired in 1997

(38) Identify the immediate cause of Claire's death and explain the basis for your answer.

Swelling of the brain which caused pressure effects on the vulnerable areas of the brain

(39) State all causative factors of that cause of death which have been positively identified.

Inflammation of the brain, brain swelling and its pressure effects

(40) Identify precisely on the attached copy notes and records from the Regional Neuropathology Service in relation to the autopsy carried out on Claire Roberts the entries that you made or which were made on your direction and state:

(a) When each of the identified entries was made

These are already identified on the furnished copy

(b) The source of the information recorded in the entry. Please see (a) above.

(41) In relation to the attached copy notes and records from the Regional Neuropathology Service relating to the autopsy carried out on Claire Roberts:

(a) Explain the name and purpose of the document at Ref: 090-054-178.

Laboratory work up document and the purpose is to record the laboratory procedures

(b) Identify the persons who made the handwritten notes on Ref: 090-054-178 and their job title.

I cannot identify but it is likely to be one of the medical laboratory technicians

(c) Explain the meaning and significance of the entry:

"Brain Blocks X10 √ H+E Date In 28/11/96 Date Out 23/12/96". (Ref: 090-054-178)

(i) Explain what *"H+E"* means.

Haematoxylin and Eosin- the dyes used to stain the cells

(ii) Explain where the brain blocks went *"in"* to on 28th November 1996, and why this was being done at this time.

'in' means when the blocks when taken by the pathologist were taken into the laboratory for processing including making glass slides

(iii) Explain where the brain blocks went *"out"* to on 23rd December 1996, and why this was being done at this time.

'out' means when the glass slides went to the pathologist for examination

(d) Explain the meaning and significance of the entry:

"Further blocks Dr. Mirk. 31.1.97" (Ref: 090-054-178) and:

(i) Identify *"Dr. Mirk."*, his/her position at that time and his/her involvement and role in Claire's autopsy and autopsy report.

Dr Mirk meant Dr Mirakhur who was the Consultant Neuropathologist who was part of the team along with Dr Herron

(ii) Explain what was happening to further blocks at that date and the purpose of this.

It was felt after the initial examination that extra blocks were required for further examination

(iii) Explain why this was being done at that time and identify who directed/requested that it be done.

To examine the areas of brain in greater detail. I requested this.

(iv) Explain who cut the blocks and when this was done.

I did the additional blocks on 31.1.1997 as stated in the records

(e) Explain the meaning and significance of the entry:

"1 Mamillary bodies HE

1 block from this deeper structure of the brain to be stained with H and E

4 Brain "

4 extra blocks from brain for further detailed examination and stained with H and E

Urgent for NSU

This is a discussion meeting of the Neurosciences Unit (NSU) with the clinicians

EB'S out to Dr. Mirk. *Date Out 6.2.97"* (Ref: 090-054-178) and:

Extra blocks to Dr Mirakhur for further detailed examination

(i) Explain what "Mamillary bodies" is and why a block was being taken from there.

Mamillary bodies is a deeper structure of the brain and a block was taken to identify any pathological lesion

(ii) Explain what *"HE"* is, when this was done and by whom.

Haematoxylin and Eosin is a staining procedure which was carried out by one of the laboratory technicians

(iii) Explain what *"4 Brain"* is, and explain why 4 blocks were being taken from there.

Extra blocks made for further detailed examination

(iv) Explain what *"NSU"* is. Neurosciences Unit

(v) Explain why it was *"Urgent"* it was urgent because all the sections could be examined before discussion with the clinical colleagues

(vi) Explain what *"EB'S"* are. Extra blocks

(vii) Explain why *"EB'S"* were going *"out to Dr. Mirk"* at that time, identify who directed that this be done, and state the purpose of this and what was going to be done to the *"EB'S"*.

EBs were done for further detailed examination as requested by Dr Mirakhur

(f) Explain the meaning and significance of the entry:

"Cord x 2 *Date In 1/5/97* *Date Out 23/5/97"* (Ref: 090-054-178) and:

For (i) – (iv) below: Cord x 2 (spinal cord) is most probably an incorrect entry as this was a brain only autopsy

(i) Explain what "Cord x 2" is and what was being done with it.

(ii) Explain why this was being done at that time and identify who directed that it be done.

(iii) Explain the meaning of *"Date In 1/5/97"* and why this was being done at that time, particularly after the autopsy report had been furnished.

(iv) Explain the meaning of *"Date Out 23/5/97"* and why this was being done at that time, particularly after the autopsy report had been furnished.

(g) Explain the name and purpose of the documents at Ref: 090-054-179 and 180.

These are laboratory workup records

(h) Identify the persons who made the handwritten notes on Ref: 090-054-179 and 180 and their job title.

Probably one of the medical laboratory technicians at that time.

(i) Explain the meaning and significance of the entry:

"Specimen Received Brain received in the laboratory from the mortuary

Brain only. 1 piece for snap Frozen 2 Blocks One tissue sample from brain frozen instantaneously into two blocks

1 piece for EM *Date in 24/10/96"* (Ref: 090-054-179)

1 tissue sample for electron microscopy

(i) Explain the meaning of *"snap"* instantaneous freezing

(ii) Explain the meaning of *"1 piece for snap Frozen 2 Blocks"* 1 tissue sample frozen instantaneously into two blocks

(iii) Explain what was done with the sample *"for snap Frozen 2 Blocks"*, whether it was subject to any further examination or tests, and if so the results of that test/examination, and the location of this sample now.

As far as I can recall, this was not subjected to further examination. I believe the tissue was there till 2007 when it was irrevocably damaged due to freezer malfunction.

(iv) Explain the meaning of *"EM"*. Electron microscopy

(v) Explain the meaning of *"1 piece for EM"*. 1 tissue sample for electron microscopy

(vi) State whether the sample was subject to *"EM"* , and if so, when, what was the result or outcome of *"EM"* analysis and identify the record thereof. If not, explain why not.

The tissue sample was processed but no abnormality was found

(j) Explain the meaning and significance of the entry:

M.L.S.O. Medical laboratory Scientific Officer *Li Ping* Name of the person

Diagnosis *viral o Encephalitis Epilepsia* clinical diagnosis taken from the autopsy request form

Cut up - Notes *Cut up 28/11/96 - Dr. Herron - Blocked* when the brain was cut after fixation and examined in detail; Dr Herron then made the initial blocks

Store/out etc. *KPH 28/11/96* brain remains fixing in formalin and is kept pending for histology (KPH, store) till the case is completed

Out 24/4/97" (Ref: 090-054-180) the brain is disposed off after completion of the case

(i) Explain the meaning of *"M.L.S.O"* Medical laboratory Scientific Officer

(ii) Identify the position of *"Li Ping"* and his/her involvement in Claire's autopsy.

Li Ping was one of the junior technicians in the laboratory at that time who helped with the laboratory procedures

(iii) State the basis of the recorded diagnosis on this form.

This is recorded by one of the laboratory technicians probably on the basis of the information in the autopsy request form

(iv) Explain the meaning of *"viral o Encephalitis Epilepsia"*, and clarify the diagnosis recorded.

This is the clinical diagnosis in the autopsy request form

(v) Explain the meaning of *"Cut up - Notes"*

This is a laboratory record of the procedure carried out during the brain cut

(vi) Explain the meaning of *Cut up 28/11/96 - Dr. Herron - Blocked"*, explain what was done, when and identify who did it and why it was being done on *"28/11/96"*.

Explained above in (j)

(vii) Explain the meaning of *"Store/out etc."* Please see (j) above

(viii) Explain the meaning of *"KPH 28/11/96"* and explain what happened on *"28/11/96"*, who was involved and why it happened then. Please see (j) above

(ix) Explain the meaning of *"Out 24/4/97"* and explain what happened on *"24/4/97"* and why it happened then, particularly after the autopsy report had been furnished, what was done with the sample then and where the sample is now.

Out is tissue disposal, it usually happens after the report is completed.

(x) If samples were stored, please state how they were stored, and in particular whether they were stored in formalin.

Brain tissue samples were stored in formalin

(k) Explain the name and purpose of the document at Ref: 090-054-182.

This is a record of the laboratory workup

(l) Identify the persons who made the handwritten notes on Ref: 090-054-182 and their job title.

I cannot identify but it could be one of the laboratory staff

(m) Explain the meaning and significance of the entry:

"Stained slides →D. Sgt. B. Cross for referral to Dr. B. Harding

It appears that the slides were sent for external opinion to Dr B harding through Sgt B Cross; however, I have no direct knowledge of it.

Copies of Parental Consent and Coroners Information rec'd.

Copies of Inventory – *B. Cross*

- *Sp. Case file*
- *Archivist"* (Ref: 090-054-182)

(i) Identify by whom this note was made and state when it was made.

I cannot identify the handwriting.

(ii) Explain what the *"Inventory"* is and furnish a copy thereof.

Inventory is probably a list of slides and blocks which were requested to be sent for external opinion, a copy of which should be available in the Department.

(iii) Explain what the *"Sp. Case file"* is and furnish a copy thereof.

"Sp. Case file" is a record of autopsies in the Department, the copy of which should be available in the Department.

(iv) State whether Claire's case was included in the *"Sp. Case file"* and if so, state when and the reasons why.

All autopsy cases are included in the "Sp. Case file"

(v) Explain the meaning and purpose of *"Archivist"* and identify that person by name.

Archivist is the person who keeps a record and tracks the material in the Department. I believe her name was Catherine Kilpatrick

(n) In relation to the *"Autopsy Request Form"* :

(i) State the number of pages in this form and provide a complete double-sided copy of the complete form.

I have two pages: Nos 090-054-183 and 090-054-184, copies are already furnished

(ii) Explain the meaning of *"the requesting doctor"* and state whether that doctor is normally the Consultant who was responsible for the paediatric patient. If not, then identify who is normally *"the requesting doctor"*.

Requesting doctor is the doctor who requested the autopsy- it is usually a Consultant or a Senior Registrar responsible for patient's care.

(iii) State whether *"the findings of the autopsy"* were *"telephoned"* to Dr. Steen, and if so, state when this was done, by whom and identify any note, record or document relating thereto.

I cannot recall

(iv) State the purpose of *"the findings of the autopsy"* being *"telephoned"* to the requesting doctor in paediatric autopsy, when this is usually done, by whom and what note or record is made thereof.

The purpose is to inform the clinician of the preliminary results of the autopsy. It is usually done as soon as possible after completion of the autopsy by the person who has carried out the autopsy.

(v) State whether you took any steps to check or ascertain the accuracy and impartiality of the information in the autopsy request form, and in particular the information relating to Claire's clinical presentation, history, diagnosis and clinical problems on that form. If so, describe those steps, when you took them and what the outcome was. If not, explain why not.

I cannot recall

(vi) Identify the chart referred to in the form in *"INVESTIGATIONS: See chart"* and furnish a copy thereof.

I cannot recall

(o) In relation to the autopsy report at Ref: 090-054-186 to 188:

(i) Identify the person who made the handwritten notes on and amendments in this report and state when they were made.

These were made by me during compiling the report

(ii) Explain the meaning of *"CODES"*.

This is a system of recording the diagnosis

(iii) State whether you were involved in the drafting or preparation of this report, and if so describe your involvement and the dates thereof.

I was involved as far as I can recall, being involved in preparation of the report with Dr Herron but I cannot recall the dates.

(p) In relation to the autopsy report at Ref: 090-054-190 to 192:

(i) Explain the meaning, significance of each reference and the site to which it refers: *"T-A0100, M-01000, D4-00000, M-40000, D4-41720"* (Ref: 090-054-190).

This is a diagnostic coding system referring to topography, morphology and diseases of the brain

(ii) Explain the reason why this report is dated *"25/10/96"* and *"11/2/97"* and what occurred on each date in relation to the report and autopsy.

These are the dates of typing inserted by the secretarial staff and probably indicate when the drafts were prepared

(iii) State whether you were involved in the drafting or preparation of this report, and if so describe your involvement and the dates thereof.

Please see 41(o(iii)) above

(q) In relation to the autopsy report at Ref: 090-054-193 to 195:

(i) State whether you were involved in the drafting or preparation of this report, and if so describe your involvement and the dates thereof.

I was involved as part of the team with Dr Herron; I cannot recall the dates

(r) In relation to the document at Ref: 090-054-196:

(i) Explain the name and nature of this document.

This is a laboratory workup record

(ii) Identify the entries relating to Claire Roberts and the person who made those entries and the date when they were made.

The entry suggests that the tissue sample was checked by one of the laboratory staff with initials JM; the entry appears to be dated 6/3/07

(iii) Explain the meaning of *"Type Frozen SNAP"*

This means that the tissue was instantaneously frozen

(iv) Explain the meaning and significance of *"checked JM 6/3/07"*.

The entry indicates that the presence of the tissue was checked by person with initial JM on that date

(v) Identify *"JM"* and their job title and explain what was being checked, and why it was being checked on *"6/3/07"*.

It would have been one of the laboratory staff (also see (iv) above)

(s) Explain why there are copies of 4 different versions of Claire's autopsy report held in the notes and records relating to Claire's autopsy.

These are different drafts during the preparation of the final report.

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

No further comments for (a)-(d) below

(a) Record keeping

(b) Lessons learned from Claire's death and how that has affected your practice

(c) Current Protocols and procedures

(d) Any other relevant matter

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

Signed: Meenakshi Nirakkar Dated: 30/5/12

(328)

Northern Ireland Regional Neuropathology Service

Case Review Records

Name	Lab No	Hosp No
CLAIRE ROBERTS	NPPN 114/96	

Date	Comments
21/3/07	SEE COVERING LETTER
29/4/08	All slides returned from Det Sgt Cross via PSNI Constable
	Recd 23 Immune Slides 4 Semi thins 44 H+E Stained Slides (incls Levels + Duplicates)

The ROYAL HOSPITALS

N.I. Regional Neuropathology Service
Institute of Pathology
Royal Group of Hospitals Trust
Grosvenor Road
Belfast BT12 6BA
Tel: 02890 240503 Ext: [redacted]
Tel: [redacted] (direct line)
Fax: 02890 438024
Brian.herron@[redacted]

20th March 2007

FAO:- Detective Sgt Billy Cross

Dear Detective Sgt Cross

RE: Claire Roberts NPPM 114/96

I release to your care the following:

32	H&E Stained slides.
23	Immunohistochemically Stained slides.
4	Semi thins

We still have a very small amount of tissue in a freezer and if this is required we need to make alternative arrangements as this would thaw out during normal transport. We also have 16 paraffin blocks that can be collected either now or at a later date.

Yours sincerely

Dr B Herron
Consultant Neuropathologist

Enc.