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TRANSCRIPT OF PROCEEDINGS

INQUIRY INTO THE CONVICTIONS OF KATHLEEN MEGAN FOLBIGG

TUESDAY, 19 MARCH 2019 at 10.00am

PRESENT:

Legal representatives
Gail Furness SC, Senior Counsel assisting the Inquiry
Ann Bonnor, counsel assisting the Inquiry
Sian McGee, counsel assisting the Inquiry
Jeremy Morris SC, Senior Counsel for Ms Folbigg
Robert Cavanagh, counsel for Ms Folbigg
Isabel Reed, counsel for Ms Folbigg
Kate Richardson SC, Senior Counsel for Dr Allan Cala
Ian Fraser, counsel for NSW Health
Ragni Mathur, counsel for Professor John Hilton

Witnesses
Professor Johan Duflou, Forensic Pathologist
Dr Allan David Cala, Senior Staff Specialist at the Newcastle Department of Forensic Medicine
Professor John Miller Napier Hilton, Former Forensic Medicine Consultant
Professor Stephen Cordner, Professor of Forensic Pathology International at Monash University and head of International Programs at the Victorian Institute of Forensic Medicine

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SPECIAL INQUIRY

THE HONOURABLE REGINALD BLANCH AM QC

TUESDAY 19 MARCH 2019

INQUIRY INTO THE CONVICTIONS OF KATHLEEN MEGAN FOLBIGG

PART HEARD

JUDICIAL OFFICER: Yes?

FURNESS SC: Thank you. Your Honour, I apologise for the delay. Mr Hilton was caught at a train station.

JUDICIAL OFFICER: I understand that. Thank you.

FURNESS SC: Now, the four witnesses, all forensic pathologists have been seated and your Honour will be pleased to know that it was other counsel who decided the seating arrangements.

JUDICIAL OFFICER: Other counsel to?

FURNESS SC: All the other counsel decided who would seat, yes.

JUDICIAL OFFICER: I see. They've decided.

FURNESS SC: Professor Cordner is on his own.

JUDICIAL OFFICER: I see.

LTS:DAT

<JOHAN DUFLOU, AFFIRMED, ALLAN CALA, JOHN HILTON AND STEPHEN CORDNER, SWORN(10.19AM)

FURNESS SC: Starting with you Professor Duflou, would you tell the Inquiry your full name and occupation and business address?

WITNESS DUFLOU: My name is Johan Duflou. I'm a forensic pathologist. My business address is Forensic Medicine Associates in Manly.

FURNESS SC: And you're a consultant forensic pathologist in private practice?

WITNESS DUFLOU: I am.

FURNESS SC: How long have you been in private practice solely?

WITNESS DUFLOU: In full-time private practice for about two and a half, three years now.

FURNESS SC: What work did you do before that?

WITNESS DUFLOU: Before that I was clinical director of the Department of Forensic Medicine in Glebe.

FURNESS SC: In New South Wales?

WITNESS DUFLOU: Yes, in New South Wales.

FURNESS SC: How long were you in that job?

WITNESS DUFLOU: Well, I commenced as a specialist forensic pathologist there in 1988 and I've progressed up the ladder I think it's fair to say over the years.

FURNESS SC: Is that the position you held when you left again?

WITNESS DUFLOU: It was clinical director.

FURNESS SC: And that was when?

WITNESS DUFLOU: 1988, October 1988. Sorry, it's not, no, no, no, sorry, I'm sorry. It was October 2015 or 16.

FURNESS SC: You have only worked professionally in that place?

WITNESS DUFLOU: No, no, I'm, I, before that I worked in South Africa where I trained as a forensic pathologist and I worked as a specialist forensic pathologist there for a year. That was in Cape Town.

FURNESS SC: Do you hold any other positions at the moment?

WITNESS DUFLOU: I'm a clinical professor at the University of Sydney at the medical school and I'm a conjoint associate professor at the National Drug and Alcohol Research Centre of the University of New South Wales.

FURNESS SC: What colleges do you have fellowships with?

WITNESS DUFLOU: With the Royal College of Pathologists of Australasia and I am with the Royal College of Physicians of the United Kingdom.

FURNESS SC: Have you had any particular interest in research or working in SIDS?

WITNESS DUFLOU: I believe I have. I'm co-author or sole author of now 130 research articles on a variety of topics including childhood death, injuries, drug overdoses, but basically the broad range of aspects of forensic pathology. I continue doing research to this day and I continue submitting papers for publication.

FURNESS SC: I understand you were a member of the New South Wales Sudden Infant Death Advisory Committee from 1992 to 2015?

WITNESS DUFLOU: Yes, that's about right.

FURNESS SC: At the time of the autopsies and reports made in respect of Sarah and Laura, you were working at the institute in Glebe?

WITNESS DUFLOU: Yes, I was.

FURNESS SC: Did you have any formal role in respect of either of those?

WITNESS DUFLOU: No, I did not. I, I was aware that the autopsies were being done. But I had no formal role at that, in relation to them.

FURNESS SC: Did you have any informal role?

WITNESS DUFLOU: It's a while back but I recall Professor Hilton showing me aspects of the autopsy that he did on Sarah, in terms of specifically the uvula. And I very clearly recall seeing the microscopy slides at the time in relation to, to Laura.

FURNESS SC: Was your opinion sought?

WITNESS DUFLOU: I'm not sure so much if it was sought, as opposed to a discussion of the findings and showing specifically the heart slides to a number of forensic pathologists and, and I was present in the room when they were shown.

FURNESS SC: You inspected them?

WITNESS DUFLOU: Yes, absolutely.

FURNESS SC: You've provided a report engaged by those representing Ms Folbigg?

WITNESS DUFLOU: Yes, I have.

FURNESS SC: Dated 13 February 2019?

WITNESS DUFLOU: Yes.

FURNESS SC: The contents of that report are true and correct?

WITNESS DUFLOU: Yes, they are.

FURNESS SC: Yes, I tender that report your Honour, together with the professor's CV and letter of instructions.

EXHIBIT #L REPORT OF JOHAN DUFLOU DATED 13/02/19 TOGETHER WITH CV AND LETTER OF INSTRUCTIONS TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: Can I turn to you Dr Cala? Can you tell the inquiry your full name, occupation and professional address?

WITNESS CALA: Allan David Cala, I'm a senior staff specialist at the Newcastle Department of Forensic Medicine in New South Wales. And, the address is at John Hunter Hospital, Newcastle.

FURNESS SC: How long have you had that position?

WITNESS CALA: Since 2008.

FURNESS SC: What work did you do prior to that?

WITNESS CALA: I commenced pathology training in 1988 in Canberra and I did a number of years of anatomical pathology there. And then at St Vincent's Hospital in Sydney in 1993 but then I commenced forensic pathology training at Glebe in Sydney in 1994 and sat my exam for fellowship that year and passed. Then I went to the UK for a period of 1995 and returned early in 1996 back, again back to Glebe, where I stayed until the end of 2002 as a staff specialist forensic pathologist and then I moved to Adelaide for five years as a forensic pathologist. And then in early 2008 I moved to Newcastle.

FURNESS SC: When you were in Glebe at 1993/1994, did you report to Professor Hilton?

WITNESS CALA: Well, yes he - I was a trainee then and he was the director.

FURNESS SC: When you were working in Adelaide, was Dr Byard there at

the time?

WITNESS CALA: Yes.

FURNESS SC: Or Professor Byard?

WITNESS CALA: Yes.

FURNESS SC: What was your professional relationship with him?

WITNESS CALA: Initially, I, I was appointed the chief pathologist in Adelaide and after 18 months I decided that wasn't for me so I stood down and became a staff specialist and then Professor Byard took on that role for a brief period until he stood down. But he stayed on in a part time role in that department until I left at the end of 2007.

FURNESS SC: What colleges do you have fellowships with?

WITNESS CALA: I've got a fellowship of the Royal College of Pathologists of Australasia and many years ago I obtained a diploma from the Royal Australian College of Obstetricians and Gynaecologists in obstetrics and gynaecology but not as a fellowship but as a minor, as a diploma for the intention of practicing obstetrics and gynaecology in rural areas.

FURNESS SC: Do you have a main area of research or other professional interest?

WITNESS CALA: I think it's fair to say of late, I've published with the assistance of colleagues locally and overseas, more on drowning and diagnosis of drowning both salt water drowning and freshwater drowning and a number of articles have been published particularly since around about 2013 in relation to testing for drowning. But I'm also very involved in training and teaching of young forensic pathology, of trainees in forensic pathology, so I'm heavily focused on examination preparation and their learning to sit the various examinations.

FURNESS SC: In terms of the Folbigg children, I think you were first involved in relation to Caleb's death when you examined some of his tissue? You don't remember that?

WITNESS CALA: I, I have a recollection that I looked at some of Caleb's tissue around the same time but after Laura's death?

FURNESS SC: I think the date indicates earlier but we'll come to that document if you don't recall that.

WITNESS CALA: All right, I don't.

FURNESS SC: You conducted the autopsy on Laura?

WITNESS CALA: Yes.

FURNESS SC: You also gave evidence at the trial?

WITNESS CALA: Yes.

FURNESS SC: And during the course of the trial there was various written communications between you and the investigators?

WITNESS CALA: Yes.

FURNESS SC: You have provided a report at the request of the Inquiry dated 26 November 2018?

WITNESS CALA: Yes.

FURNESS SC: The contents of that are true and correct?

WITNESS CALA: I believe so.

FURNESS SC: I tender that together with the CV and letter of instruction.

EXHIBIT #M REPORT OF ALLAN DAVID CALA DATED 26/11/18 TOGETHER WITH CV AND LETTER OF INSTRUCTION TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: You also provided a report dated 13 February this year, what was the circumstances in which that report was written?

WITNESS CALA: That, that was to answer a report of Professor Cordner's in which in his report he had presented some of the parts of the slides of Laura Folbigg's myocardium or heart to various pathologists at the Victorian Institute of Forensic Medicine. And he sought an opinion in relation to their views on the extent if any, of the myocarditis and the cause, what, and, and raised the question about was it the cause of death. So, I made comments in relation to that. And, I, I don't have the report in front of me but there were other things that were also commented upon as well.

FURNESS SC: The contents of that are true and correct?

WITNESS CALA: I believe so.

FURNESS SC: I tender that.

EXHIBIT #N REPORT OF ALLAN DAVID CALA DATED 13/02/19 TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: Professor Hilton, could you tell the Inquiry your full name and--

WITNESS HILTON: John Miller Napier Hilton.

FURNESS SC: I think we're going to have to assist you to assist you to be heard. You might have to sit forward a little bit. Your full name?

WITNESS HILTON: John Miller Napier Hilton.

FURNESS SC: Your current occupation?

WITNESS HILTON: I suppose I'm best described as retired.

FURNESS SC: When did you retire?

WITNESS HILTON: I stopped accepting new work three years ago.

FURNESS SC: How long?

WITNESS HILTON: Three years ago.

FURNESS SC: What work were you doing three years ago?

WITNESS HILTON: I was consulting in forensic medicine. That's broadly.

FURNESS SC: I missed the beginning of that, I'm sorry.

WITNESS HILTON: I was broadly consulting in forensic medicine.

FURNESS SC: When was the last time you held an appointment?

WITNESS HILTON: About 2003, I think, from memory.

FURNESS SC: You were the director of the New South Wales Institute of Forensic Medicine at Glebe from I think the 90s until 2001. Is that right?

WITNESS HILTON: Yeah, 2001, 2002.

FURNESS SC: Did you work elsewhere between 2002 and 2003?

WITNESS HILTON: I did some, I suppose locum work at Newcastle, Westmead, Wollongong.

FURNESS SC: Since you stopped working in other than a consultant capacity, have you maintained any particular research interest?

WITNESS HILTON: Yes.

FURNESS SC: What in?

WITNESS HILTON: Well, I've had a research interest going back to the very early 1970s into child deaths. I've also been involved in other aspects of forensic medicine and forensic pathology, aviation medicine, aviation

pathology, little bit of tropical medicine, expert evidence. It's been a long and busy life.

FURNESS SC: You worked in the same location as Dr Cala, as he had indicated. Is that right?

WITNESS HILTON: Yes.

FURNESS SC: Did you also work with Professor Duflou?

WITNESS HILTON: Yes.

FURNESS SC: What were your relative capacities?

WITNESS HILTON: Dr Duflou, Professor Duflou was my deputy.

FURNESS SC: You have provided a report, I think at the request of the Inquiry, dated 22 January 2018. Is that correct? 2019?

WITNESS HILTON: Will you give me that date again, please?

FURNESS SC: 22 January 2019. Do you have your report in front of you?

WITNESS HILTON: I've got the report here but that's dated 30 December 2018, and that was in the form of a letter in response to your instructor.

FURNESS SC: I'm sorry, I missed that.

WITNESS HILTON: This was a letter in response to your instructing solicitor and it's addressing a couple of questions that were put to me.

FURNESS SC: A couple of questions?

WITNESS HILTON: Yeah.

FURNESS SC: That's 22 January 2019. No, that's the document I originally--

WITNESS HILTON: No, I've - no. That's a different - just given me a copy of--

FURNESS SC: Perhaps we might - do you see what's on the screen? That's the document I was referring to, 22 January 2019.

WITNESS HILTON: Yes.

FURNESS SC: You have that with you?

WITNESS HILTON: Yes, I do.

FURNESS SC: Are the contents of that true and correct?

WITNESS HILTON: Yes.

EXHIBIT #O REPORT OF JOHN MILLER NAPIER HILTON DATED 22/01/19 TOGETHER WITH CV TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: There was an affidavit you prepared, I think at the request of Ms Folbigg's representatives, but--

WITNESS HILTON: Yes.

FURNESS SC: --you may correct me if I'm wrong--

WITNESS HILTON: Yes.

FURNESS SC: --but do you have that, dated 13 November 2018?

WITNESS HILTON: I don't have it with me, here.

FURNESS SC: I beg your pardon?

WITNESS HILTON: I do not have it with me here.

FURNESS SC: Do you recall the document I'm referring to?

WITNESS HILTON: Yes.

FURNESS SC: It should come up on the screen. What were the circumstances in which you swore that affidavit?

WITNESS HILTON: I was asked by Mr Stuart Gray of Cardillo Gray Partners to prepare an advice on essentially my colleague Dr Cala's training and position.

FURNESS SC: I missed the last word.

WITNESS HILTON: His training and his position.

FURNESS SC: Are the contents of that affidavit true and correct?

WITNESS HILTON: Yes.

EXHIBIT #P AFFIDAVIT OF JOHN MILLER NAPIER HILTON DATED 13/11/18 TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: At a convenient time, Professor Hilton, we'll find the other document you referred to and I'll deal with that separately. If you need to leave us for a short period at any time, just indicate and you can creep out the front door.

WITNESS HILTON: Thank you.

FURNESS SC: Professor Cordner, can you tell the Inquiry your full name, occupation and business address?

WITNESS CORDNER: Stephen Moile Cordner. I'm the professor of Forensic Pathology International at Monash University and head of International Programs at the Victorian Institute of Forensic Medicine.

FURNESS SC: How long have you held that position?

WITNESS CORDNER: I've been in those roles since July the 1st, 2014.

FURNESS SC: What work did you do before that?

WITNESS CORDNER: Prior to that, I was director of the Victorian Institute of Forensic Medicine and professor of forensic medicine at Monash University.

FURNESS SC: How long were you in that position?

WITNESS CORDNER: I was appointed to that position in May 1987.

FURNESS SC: Have you worked professionally other than associated with the Monash University and the Victorian Institute?

WITNESS CORDNER: I'm sorry?

FURNESS SC: Have you worked elsewhere professionally?

WITNESS CORDNER: Prior to that, prior to 1987, from 1981 I was lecturer and senior lecturer in forensic medicine at Guy's Hospital in London.

FURNESS SC: Do you hold any other appointments or positions now in respect of forensic pathology?

WITNESS CORDNER: No.

FURNESS SC: Do you have any particular research interests?

WITNESS CORDNER: I was thinking as you were asking that question. Mine have been perhaps eclectic, would be fair to say. Mainly in areas to do with prevention of death and injury in forensic pathology and a little bit in relation to infant deaths in some work I did for the Goudge inquiry in Canada.

FURNESS SC: That's G-O-U-D-G-E inquiry?

WITNESS CORDNER: Yes. And different sort of topics that have come up over the 30 years that I've been involved.

FURNESS SC: As Dr Cala indicated, you and he worked in the same institute for a period of time?

WITNESS CORDNER: I don't think we've worked in the same institute at any time.

FURNESS SC: You weren't the pathologist in the same area that he was physically located?

WITNESS CORDNER: No.

FURNESS SC: Dr Cala, did you just indicate to me that that was the case?

WITNESS CALA: No.

FURNESS SC: I beg your pardon.

SPEAKER: Dr Byard.

FURNESS SC: I'm sorry. Thank you. Have you had any professional working arrangements in the same place with any of the three gentlemen over there?

WITNESS CORDNER: No, no. We've had - I think it'd be fair to say we all know each other pretty well but not from having necessarily worked in the same place.

FURNESS SC: You provided a report which is undated. Do you understand the report I'm speaking of?

WITNESS CORDNER: Yes.

FURNESS SC: When did you prepare that report?

WITNESS CORDNER: I prepared that report over the course of about 12 months, most of 2014 - sorry - most of 2013 and - sorry - most of 2014 and it was submitted in April/May 2015.

FURNESS SC: Who requested you to prepare that report?

WITNESS CORDNER: The Public Interest Law Centre in Newcastle and Shaun McCarthy in particular

FURNESS SC: You set out in your report all of the material you had access to?

WITNESS CORDNER: Yes.

FURNESS SC: Were you asked at any stage since this inquiry was established to provide an updated report?

WITNESS CORDNER: I was asked if I, that I could if I wished, but I didn't take up that opportunity.

FURNESS SC: You didn't see the need to amend, alter, add to any of your opinions or observations in the report?

WITNESS CORDNER: I think it'd be - I mean, there's, there's always improvements that one could make and additions that one could make. It's never ending, never ending work, really. I suppose I thought that I put in as much as I felt that I should and so I didn't put in any more.

FURNESS SC: Professor Pollanen was involved in reviewing your report?

WITNESS CORDNER: Yes.

FURNESS SC: Did you organise that?

WITNESS CORDNER: I'm sorry?

FURNESS SC: Did you organise that? I apologise for my voice.

WITNESS CORDNER: Did I organise that? I might've asked. Yes, I suppose I did ask him if he would review it. He's a person whose intellect I respect and I thought there was some value in having somebody outside the institution look at it and make any comment that he saw fit, so, so he did.

FURNESS SC: What position did he hold at the time you asked him to perform that task?

WITNESS CORDNER: He's the chief forensic pathologist in the Province of Ontario in Canada.

FURNESS SC: Was he involved in with the Goudge inquiry as well?

WITNESS CORDNER: Yes, he was.

FURNESS SC: Is that where you developed a professional relationship with him?

WITNESS CORDNER: Well, in the, in the lead up to it, so in the years prior as well, yes.

FURNESS SC: Did he have access to all the material you had access to?

WITNESS CORDNER: No. He had access to my report.

FURNESS SC: That was based on what was in your report?

WITNESS CORDNER: Yes.

FURNESS SC: I tender the report of Professor Cordner, which - can we call it a 2015 report, professor?

WITNESS CORDNER: Yes.

EXHIBIT #Q 2015 REPORT OF STEPHEN MOILE CORDNER TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: I'm going to have to move between the two of you and I'm sorry that you find it hard to hear me as I do that, but we'll just have to all grin and bear it. Can I start by having on the screen the SIDS definitions that we've had yesterday? Did any of you have the benefit of listening to the evidence yesterday?

WITNESS CORDNER: No.

WITNESS DUFLOU: No.

FURNESS SC: If we can have that. Do you see the first box is the definition which, as I understand it, was widely accepted in 1991 and at the time of the trial? Professor Cordner, do you agree with that?

WITNESS CORDNER: Yes.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Yes.

FURNESS SC: Dr Cala?

WITNESS CALA: Yeah.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Yes.

FURNESS SC: Then in 2004 there had been a deal of work done prior to that which resulted in the definition which appears below, and perhaps we could just scroll up. Tell me if anyone objects to the proposition that that's the current definition of SIDS that is applied by people in your field today.

WITNESS HILTON: Well, there's certainly been a certain amount of discussion?

FURNESS SC: I beg your pardon?

WITNESS HILTON: There has certainly been a certain amount of discussion of that 2004 definition, but basically, it probably still stands. It hasn't been - to my knowledge, it has not been officially amended.

FURNESS SC: Dr Cala, do you have anything to say about it, the fact of whether it applies, the detail of it?

WITNESS CALA: I, I think it's fair to say that it's, it's been met with general acceptance by the forensic medical community.

FURNESS SC: Thank you. Professor Duflou?

WITNESS DUFLOU: I, I certainly accept it as a good working definition, which I use.

FURNESS SC: Professor Cordner, sorry.

WITNESS CORDNER: Well, that's the definition that - and the sub-categorisations, that we use at the Victorian Institute of Forensic Medicine.

FURNESS SC: Thank you. Now, I understand, largely from Professor Byard's work, that the main changes from the earlier definition to the accepted current one is that there is a particular reference to it occurring during sleep and there is a greater emphasis on the nature of the investigation. Do you agree with that?

WITNESS CORDNER: I didn't think, actually, the definition is really substantially different. It's the categorisations that follow it that always struck me as the main difference.

FURNESS SC: All right, so--

WITNESS CORDNER: But if, if Professor Byard says that's a difference, he'd - I mean, he's totally involved with generating it, so, I'm happy to accept that.

FURNESS SC: Professor Duflou, do you have anything to say about any changes?

WITNESS DUFLOU: Look, there's certainly always been the view that SIDS is much more common during sleep. But I think there have been circumstances where it appears the infant death did not necessarily occur during the sleep. And, I, I, I think what the 2004 definition does is it emphasises sleep, but the 91 definition does not exclude--

FURNESS SC: No.

WITNESS DUFLOU: --that as the most likely scenario.

FURNESS SC: Thank you. Dr Cala?

WITNESS CALA: I don't have much to add.

FURNESS SC: Thank you.

WITNESS HILTON: Yeah, the sub-categorisation, I think, is, is a - is a highly commendable effort to bring a bit of order out of what was considerable chaos

and poor understanding.

FURNESS SC: So, coming to the sub-categories, there weren't categories before 2004 and the purpose of the categories, was it largely to assist those dealing in research and matters of epidemiology to be able to, with some more certainty, classify deaths?

WITNESS CORDNER: Well, I think that, that makes a lot of sense and the thought of subdividing them into groups intuitively you would think would help in doing just what you said.

FURNESS SC: Yes. Professor Duflou?

WITNESS DUFLOU: I use the sub-categories not so much for research purposes, but to add some clarity to my reasoning when I issue a SIDS report.

FURNESS SC: Dr Cala?

WITNESS CALA: Yes, my understanding is that the sub-categories were introduced largely for research and epidemiological reasons, but I accept what Professor Duflou has just said as well, that it can add to the understanding of the death by sub-categorising, if one feels the need to do so.

FURNESS SC: So, since 2004, Dr Cala, have you had cause on an autopsy report or death certificate to put cause of the death as SIDS, or SIDS and the various other sub-categories, or do you just stick with "SIDS"?

WITNESS CALA: I have to say that, since 2004, I have rarely caused - given a cause of death as SIDS, and the reason being that many of the deaths that I see are involved with, with young children, under the age of about one, who bed share with a variety of people but often at least one adult. And that becomes difficult in sorting out what's actually happened then during sleep--

FURNESS SC: Yes.

WITNESS CALA: --when a small baby, often less than six months old, bed shares with a large person. And so, I rarely - under those circumstances, would very rarely give the cause of death as SIDS. I prefer to say, "Undetermined" or "Unascertained" and give some commentary about what the risks are with bed sharing in that situation.

FURNESS SC: You don't believe that the definition that is in existence today precludes you from coming to a view of undetermined or unascertained?

WITNESS CALA: No, most of the sub-categories - or the - let me put it this way, many of the cases that I'm involved in, the investigation is not optimal and so that allows you to call it SIDS, but some sub-categorisation, because the death scene may have not been performed or is incomplete, or something along those lines.

FURNESS SC: But if that's the case, do you say "Undetermined" as opposed to "Category 2", for argument's sake?

WITNESS CALA: Yes.

FURNESS SC: Professor Duflou, are you in the same position, you don't actually characterise a death as category 1A, 2, et cetera, 1B?

WITNESS DUFLOU: No, I do categorise my deaths and in a case where there is bed sharing, as in the example given by Dr Cala, but where overlaying - or death due to overlaying has not been shown with certainty to use the category 2 definition, I still give that cause of death as "SIDS category 2" and then explain that I may have concerns about overlaying, as an example.

FURNESS SC: So, in those circumstances, when would you use "Undetermined" or "Unascertained" rather than "Category 2", given that there is something deficient, if you like, about the investigation or some other category of the classic SIDS?

WITNESS DUFLOU: I, I would use the term "Undetermined" if I have not - if I'm not satisfied, to a reasonable degree of certainty for the coronial jurisdiction, that I can give a cause of death. So, so, there may be some particularly disturbing aspects of the specific case. For example, there may be injuries present but, otherwise, it appears SIDS-like. The injuries though would not be sufficiently severe to be expected to cause death.

FURNESS SC: So, there--

WITNESS DUFLOU: Yeah.

FURNESS SC: --are occasions then when a death, in your opinion, would fit a SIDS 2 category, which meant there were various deficiencies, if you like, or movements away from the classic SIDS, that you would call undetermined?

WITNESS DUFLOU: If I can comfortably, in my mind, call it SIDS category 2, I will.

FURNESS SC: Thank you. Professor Cordner, you've heard that discussion. Do you use the sub-categories when formally recording cause of death?

WITNESS CORDNER: Yes.

FURNESS SC: When do you use "Determined"(as said) or "Unascertained"?

WITNESS CORDNER: Well, I think I broadly follow what I've just heard Professor Duflou say. I mean, the classic is a baby six months old, found dead in the cot and there's a healing fractured rib.

FURNESS SC: There's a?

WITNESS CORDNER: Healing fractured rib, which Professor Duflou's already mentioned. You know, there's sign of an injury but it's not relevant to the actual death but raises the thought that there's something potentially significant that you can't properly take into account within the sub-categorisations of - provided here. So, in those circumstances, undetermined, unascertained, is a reasonable alternative.

FURNESS SC: Thank you. Just turning to the sub-categories, the first one is 1A SIDS, which is "Classic features with complete investigation". There's three aspects; there's the clinical and the circumstances and the autopsy. And if we look at the clinical, for the moment, "Older than 21 days and under nine months". His Honour heard evidence yesterday that younger than 21 days can get into the category of birth issues, if you like - if I can put it in those terms - and you accept that under 21 days is properly considered not to be a SIDS death, based on this definition? Professor Cordner?

WITNESS CORDNER: Well, that - I don't think that's quite right, actually.

FURNESS SC: What do you think?

WITNESS CORDNER: So, that category 2 SIDS, "An infant death that meets category 1, age range outside category 1A or B, 0 to 21 days". So, that - to be very specific, 19 days, fits within - all other things being equal, fits within a category 2 SIDS, under this terminology.

FURNESS SC: Coming back to what is described as "Classic features with complete investigation", do you accept that the clinical description of "older than 21 days" is a valid one?

WITNESS CORDNER: Sorry, what's your question?

FURNESS SC: You're referring to SIDS 2--

WITNESS CORDNER: Yes.

FURNESS SC: --which, as you say, is "An infant death that meets category 1, except for one or more of the following", one of which is age. However, category 1A, "Classic features with complete investigation" stipulates older than 21 days.

WITNESS CORDNER: Yes.

FURNESS SC: And my question is, do you consider that's a--

WITNESS CORDNER: Yes.

FURNESS SC: --valid component?

WITNESS CORDNER: Yes.

FURNESS SC: Thank you. What's your view as to why it's under nine months for the classic features of SIDS?

WITNESS CORDNER: Well, you know, the - I imagine that the people who generated the definition argued for days about where the cut-offs were. Two to four months is the sort of peak for when SIDS occurs, most under six months, but it seems that, epidemiologically, 12 months is the sort of outer limit. But, obviously, that can't be an absolute cut-off. So, look, I'm not really competent to argue with the specifics of the definition. I'm perhaps more a consumer of the definition.

FURNESS SC: Professor Cordner indicated that most SIDS deaths are around two to four months and you agree with that, Professor Duflou?

WITNESS DUFLOU: Yes.

FURNESS SC: Dr Cala?

WITNESS CALA: Up to about six months.

FURNESS SC: But the peak is about two to four?

WITNESS CALA: Yes.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Yeah, the age range of what's commonly called SIDS, for many, many, many years now follows a bell curve, like many other distribution curves of many other illnesses, and the absolute peak probably takes place about 12 months, and that, that might - three months - and that, I think, every survey is in agreement with that. You've then got a progressing - decreasing spectrum of outliers. I would - personally, would never intellectually exclude SIDS because the child was under 21 days, and in fact I have given SIDS as a diagnosis in babies that showed no evidence of birth trauma, gave no obstetrical evidence of any problems with birth at less than 21 days. I have also given SIDS as a diagnosis in children over nine months, over 12 months and, in fact, on at least two occasions, considerably older than 12 months. So, yeah, as I say, there's a bell curve. Would I agree with that? No, I would not. But I would be prepared to act within that, with reservation.

FURNESS SC: The circumstances you've described, were they beyond 2004 or before 2004?

WITNESS HILTON: Before 2004.

FURNESS SC: Thank you. So, you didn't have a category to choose from, as it were?

WITNESS HILTON: No, no, but you had a diagnosis to choose from.

FURNESS SC: Thank you. Now, just continuing down the clinical section, it refers to "No similar deaths in siblings, close genetic relatives or other infants in the custody of the same care-giver". Now, if I can start with you, Professor Duflou, what's the relevance of that to a "Classic features with complete investigation" category of SIDS?

WITNESS DUFLOU: I, I think it's important to realise that this classification was designed predominantly for research and epidemiology purposes.

FURNESS SC: Yes.

WITNESS DUFLOU: And I, I think category 1A, if you like, is the most definite case of SIDS, the best investigated - if you like, the perfects SIDS case. And, obviously, from a research perspective, that becomes very important.

FURNESS SC: Yes.

WITNESS DUFLOU: So, I think it's done on that basis, to exclude the likelihood of various genetic diseases, to exclude the possibility of an accidental, traumatic or a, a violent death of some type, and to include only those cases who seem to have had a normal antenatal course, that's before birth, of course.

FURNESS SC: Yes, thank you for that. Other than genetic, is there any other reason for other deaths to be considered or excluded as relevant to cause of death?

WITNESS DUFLOU: Well, you'd certainly worry about inflicted injury. You'd worry about acquired diseases, so--

FURNESS SC: In respect of other siblings?

WITNESS DUFLOU: Yes, in, in, in relation to other siblings as well because it, it, it is the case that various acquired diseases or what appear to be acquired may have a genetic component to them. They may run in families. They may be the result of some environmental factor. So, for all those reasons I, I would think and I certainly had no role to play in creating these definitions.

FURNESS SC: No, I'm speaking to you as a consumer of them as Professor Cordner described.

WITNESS DUFLOU: Yes, yes.

FURNESS SC: In the event that there was a death in the custody of the same caregiver, in order to properly consider whether or not the cause of death should be SIDS 1A are you then required to look into the detail of the other death or deaths in order to form a view such as you've described in relation to environmental or genetic factors? Is that right?

WITNESS DUFLOU: Yes, look, I, I, I think to a certain extent you do. I, I've

certainly had cases where there's been more than one sudden death in an infant in a family. Not to memory since the start of this classification, not that I--

FURNESS SC: 2004?

WITNESS DUFLOU: Yeah, not that I can recall since then, but certainly before that, yes. And it, it's certainly something that you'd worry about. Typically, I would ask for the file on the case and have a review of the file of the case as part of doing the autopsy.

FURNESS SC: In the event that there was a death that fell outside of that description under clinical, would that mean you would then consider other than SIDS categories for causes of death?

WITNESS DUFLOU: Well, well, well I think you always consider other possible causes of death as part of the autopsy. So, you, you, you should never start an investigation of a death with an assumption that this will be SIDS as the cause of death. But I think you'd always keep an open mind and try and be informed in relation to circumstances.

FURNESS SC: If you'd just go to the SIDS category 2, which is a bit over the page I suspect. This is an infant death, perhaps we can make it visible. Thank you. That meets category 1 criteria except for one or more of the following and one or more of the following includes similar deaths of siblings.

WITNESS DUFLOU: Yes.

FURNESS SC: Can you help me with how you take that into account in determining that as a category 2 SIDS if there were similar deaths of siblings? How do you think about that to bring it within category 2?

WITNESS DUFLOU: Well, you look at the case, of, the, the, the first case. You try and make an assessment, was the diagnosis in retrospect an appropriate diagnosis?

FURNESS SC: Of the other siblings?

WITNESS DUFLOU: Of the, the first sibling, yes. And if it was, then I would, without difficulty give the second sibling, again assuming that there are no circumstances of concern in that case either, I would give the cause of death as SIDS and I would need to put it into category 2 because of the definition of what that--

FURNESS SC: Have you done that?

WITNESS DUFLOU: As I've said, I don't think I have had any second SIDS in families during the operation of this regime. But I've certainly had a couple of cases, probably two from memory where there's been a previous SIDS and where I have given SIDS as the cause of death in the second one.

FURNESS SC: Dr Cala, I won't attempt to ask you all those questions but you've heard the topic. What would you say about those various matters?

WITNESS CALA: Overall, I agree with what Professor Duflou has said; that particularly in relation to the second death and what one might say in relation to that if the first one was a pure SIDS death. I have to say before I committed myself to making a diagnosis I'd, I'd need to look very closely at the circumstances of the death, the autopsy findings, but also the first one as well and, and pretty well review both. And see are we missing some genetic metabolic or other abnormality that is not clear and the, the definition does say though that it's sorry in the middle bit, the deaths that are not considered suspicious for infanticide or for recognised genetic disorders. So, it seems that a police investigation has been done and, and cleared foul play or suspicion from, from a case like that.

FURNESS SC: In relation to a third death; that is there'd been two previous deaths, how would you think of that in terms of what you do with the third death looking at the categories?

WITNESS CALA: Since 2004, I haven't been in that situation but if I was I'd be extremely cautious. If, I was on the receiving end of a third death, assuming the other two had been investigated elsewhere I, I would, I'm not committing myself again to any diagnosis but I wouldn't call it a category of SIDS.

FURNESS SC: Because there were three deaths?

WITNESS CALA: Because there were three deaths and I would have to ask the question is something being missed here or has a comprehensive investigation of any of them been done and has something as I said been, been missed? Along the lines of genetic metabolic but also then with three, one in my opinion has to have at the back of their mind, is there something else going on in relation to possible trauma.

FURNESS SC: Can we understand SIDS to be a death which has unidentified perhaps natural causes but not suspected unnatural causes, is that right?

WITNESS CALA: Yes.

FURNESS SC: It's essential to it that there are only natural causes. That is, you've excluded unnatural causes? Is that right?

WITNESS CALA: As far as you can tell, yes.

FURNESS SC: Your definition of undetermined encompasses both unidentified natural causes as well as unnatural causes?

WITNESS CALA: Yes.

FURNESS SC: Is that your definition too of undetermined too Professor?

WITNESS DUFLOU: Yes it is, yes. I certainly would include cases where I suspect there may be a natural cause but I just can't see it. And those cases where I worry about trauma as an example given by Professor Cordner.

FURNESS SC: The fractured rib?

WITNESS DUFLOU: Yes, certainly. Acknowledging that that fractured rib would not of its own cause death.

FURNESS SC: Professor Hilton, since 2004 have you been involved with any case where there has been a subsequent death?

WITNESS HILTON: Not directly. I mean I have not done an autopsy on a child, on an infant subsequent to the adoption of this definition.

FURNESS SC: I see.

WITNESS HILTON: May I just add something?

FURNESS SC: Certainly.

WITNESS HILTON: This definition, the definition of Sudden Infant Death how you deal with it definitionally for statistical purposes, for management purposes it's a study in perpetual motion.

FURNESS SC: In perpetual motion?

WITNESS HILTON: Perpetual motion. And in actual fact, although this definition emerged in 2004, it was the end result of a number - every three years there was an international SIDS conference and at every international SIDS conference there was a discussion about definition and various people put forward various ideas and hopefully at the end of the day one reached a consensus. This is the, pretty well a consensus statement from 2004. In actual fact, the groundwork for that was done I think at a SIDS conference in Canberra in the same year.

FURNESS SC: Professor Cordner, you've heard those various views. What's your view?

WITNESS CORDNER: I think we all understand that whenever we use the word or the term, SIDS there's always a possibility that there may be an unnatural explanation or that there may be a natural explanation that we can't uncover. So, to the extent that there was a thought that SIDS is a natural cause of death, I'm not sure that I completely agree with that because I think most of us have in the back of our mind the thought that in any particular case it may not be. So, it is a, it is a term. Some people may hear it as natural death but I don't believe that forensic pathologists generally believe that they are absolutely saying that it is a natural death, so--

FURNESS SC: Am I to take it that if you had a cause of death, SIDS that wouldn't be excluding an unnatural cause?

WITNESS CORDNER: And, and what's important--

FURNESS SC: Sorry, can you just answer that?

WITNESS CORDNER: I'm sorry?

FURNESS SC: Can you answer my question?

WITNESS CORDNER: Yeah, can you repeat your question because I thought I was trying to but--

FURNESS SC: In the event that you would ascribe a cause of death as SIDS, you wouldn't be in doing so be excluding an unnatural cause?

WITNESS CORDNER: No. And I just wanted to sort of--

FURNESS SC: Sorry, I've made you lose your train of thought. I apologise.

WITNESS CORDNER: When I get back to it I'll, I'll, when I can recapture the thought I'll, I'll let you know.

FURNESS SC: In circumstances of category 2 SIDS, you have or could have more than one death of a sibling in the circumstances set out that is not considered suspicious for infanticide or genetic disorders and the like, you would when considering that, if you ascribed SIDS 2, similarly you wouldn't be excluding an unnatural death I take it?

WITNESS CORDNER: That's right. And I think what's important is that in the totality of the report, the sort of richness if you like of the whole picture--

FURNESS SC: Sorry, the?

WITNESS CORDNER: In the totality of the report--

FURNESS SC: The?

WITNESS CORDNER: Totality.

FURNESS SC: No, I understand that but you said the something. I didn't understand the next bit.

WITNESS CORDNER: No, no well, most reports these days include a discussion, so it isn't just the autopsy findings and a cause of death. Ruling a line under that as though that's all there is to say. So, in the discussion whatever one has given as the cause of death there is opportunity to amplify, clarify, properly express the totality of one's view and so that when you look at the report as a whole, it's not just the definition that stands there wearing the

whole weight of everything. It should also be what is in the discussion.

FURNESS SC: If we can just go back to category 1(a) on the screen, the job therefore of the forensic pathologist is under the first heading of "Clinical" ensure that there are no similar deaths. That's right, in order to be able to fit it within that? If one was going to consider--

WITNESS CORDNER: Ensure is probably a pretty high bar. So insofar as one is aware, one, the pathologist is provided with information from the system and sometimes there would be signposts in there that you would send questions back asking for further information but often not, so--

FURNESS SC: You certainly would if indeed it was obvious from the material you received that there had been one or more deaths. Then you would be obliged to investigate them in order to consider cause of death?

WITNESS CORDNER: Yes and investigate and there are systems, so it may be that another pathologist in the same institution has been involved with the previous autopsy and yes, you may ask for the file yourself, you may also ask that pathologist, "Look, I'm just doing the second death in this family, could you please review anything you did, I'd like to have a look too and we can have a discussion", so there's more than one process, I suppose, you could follow to achieve the same result.

FURNESS SC: The first job is clinical, as described in either of the SIDS categories and then the second job is to look at the circumstances and that can be described and I think has been described by a number of your colleagues as looking at the death scene. Is that what circumstances means?

WITNESS CORDNER: Well, the circumstances includes I think the death scene but not limited to it, so it is who found the baby and how the baby was in recent times, who else might be in the house, what else is going on, so it is fairly vague but there are--

FURNESS SC: But more extensive?

WITNESS CORDNER: --pro formas, there are pro formas in existence of more organised settings and they are completed by different categories of people involved.

FURNESS SC: It generally takes into account risk factors as well, I take it--

WITNESS CORDNER: Yes.

FURNESS SC: --by the bedding, that sort of thing, whether the child's been vaccinated. That's right?

WITNESS CORDNER: Smoking, heating, bedding, yes

FURNESS SC: There's the two areas, the clinical and the circumstances, and

then there's the autopsy. That's the third area of work that you undertake in order to come to a cause of death?

WITNESS CORDNER: Yes.

FURNESS SC: If you look at the first subcategory, you've got the autopsy, "The absence of potentially lethal pathological findings", and then, "Minor respiratory system inflammatory infiltrates are acceptable". Perhaps you can help those of us who don't know what an inflammatory infiltrate is, as to what that means?

WITNESS CORDNER: Well, slight signs of infection.

FURNESS SC: Slight signs of infection?

WITNESS CORDNER: Slight signs of infection within different parts, one or more parts of the respiratory tree, so--

FURNESS SC: Like a minor cold, like I've got?

WITNESS CORDNER: Yes. So, but in that case, that probably being part of the history, and, and your cold is probably up the top of your respiratory tree, right up in your nose, is not something which is always looked at particularly closely in the internal sort of examination, so it's really inflammatory infiltrates or slight signs of infection lower down in the windpipe, trachea, the air passages, bronchi, or the smaller air passages, the bronchioles, or even in the alveoli, the little sacks right at the end. So, now, some pathologists, in the early days, in the 70s, 80s, even 90s, there used to be lots of discussion about, "Well, we've got some infection down here, not very much, is that the cause of this baby's death", and some pathologists would say bronchiolitis; others would say, "Well, that's, as it is here, it's really minor respiratory system inflammatory infiltrate SIDS".

FURNESS SC: So colds and sniffles and that sort of thing?

WITNESS CORDNER: Well, I think probably a bit I more than colds and sniffles, but it's not necessarily the sort of thing that would have you admitted to hospital.

FURNESS SC: You might go to your GP but you wouldn't be admitted to hospital and if--

WITNESS CORDNER: Well, you might be, you might be. I'm not, you know, but you might not be, yeah.

FURNESS SC: But if it was of a nature that you might go to your GP and get something to take, that would be acceptable in terms of the category 1A SIDS?

WITNESS CORDNER: Yes.

FURNESS SC: Then it goes on to say, "Intrathoracic petechial haemorrhages are a supportive but not an obligatory or diagnostic finding". You need to help us there.

WITNESS CORDNER: Well, petechial haemorrhages are tiny pinpoint spots of haemorrhage the size of a pin, the point of a pin, perhaps the head of a pin, so they're very small and they're very commonly seen over the surfaces of the lungs, the heart, the thymus, so it was always said, you know, they're more common in SIDS than non-SIDS, so--

FURNESS SC: How does that work? What is it about SIDS - it might be a different question - that would give rise to those haemorrhages?

WITNESS CORDNER: Well, look, it starts to get complicated, I think, at that point.

FURNESS SC: No, no. I certainly don't want to be complicated.

WITNESS CORDNER: I'm happy to try and answer that question.

FURNESS SC: But it's nevertheless accepted that if those haemorrhages are there, it supports a finding of SIDS but they're not necessary to be there to?

WITNESS CORDNER: That's right.

FURNESS SC: If any of the three of you wish to engage in that discussion I've had with Professor Cordner, no, I take it, Professor Duflou?

WITNESS DUFLOU: No.

FURNESS SC: Dr Cala, no? Professor Hilton?

WITNESS HILTON: Yeah, I might, if I may. Inflammatory infiltrates refer to the presence of cells, usually within the bloodstream into the tissues and they arrive there outside the bloodstream, into the tissues in response to a stimulus. Now, that stimulus may well be infection. It could be other things as, as well. As regards to the petechiae, again, remembering the bell curve distribution of signs and symptoms and whatnot, the majority of SIDS babies, whatever SIDS may be, will have a varying degree of these little pinpoint haemorrhages within the chest cavity. They are mostly found in, on and in the thymus gland. They are mostly found also on the heart and they may be found on the linings, the outer linings of the lung. If they occur outside the chest, that would raise, in my mind, the possibility that they were, that the cause was, the cause of them being there was not SIDS.

FURNESS SC: When you say outside that, are you talking about other than intrathoracic?

WITNESS HILTON: Yeah. If you see them on, on the cheeks--

FURNESS SC: This is only about intrathoracic.

WITNESS HILTON: --in the lining of the eyes, in the, in or on the eyelids.

FURNESS SC: We'll come to that. I'm just interested at the moment as to the meaning of this section. What you're talking about is more than intrathoracic?

WITNESS HILTON: Yeah.

FURNESS SC: We'll come back to other than intrathoracic. Just another point on this. There's reference to occasional starry sky macrophages or minor cortical depletion. What, Professor Cordner, would we see if we saw that?

WITNESS CORDNER: Look, I'm not, I'm not really competent to answer that question. I'm very happy to pass that to Professor Duflou.

FURNESS SC: There you go, Professor Duflou. What does that mean?

WITNESS DUFLOU: It's an appearance that a pathologist can see under the microscope. Essentially, when you look at the thymus it consists of two major parts under the microscope, the cortex and the medulla. The cortex is on the outside. In cases of stress - and I'm talking about physiological, medical stress as opposed to psychological stress - the thymus gland releases inflammatory cells into your general system and it recruits macrophages, which is a type of cell involved in inflammation and the management of disease, and they tend to enlarge. When you look at the thymus under the microscope, you see a sea of blue cells with some big white ones--

FURNESS SC: A starry sky.

WITNESS DUFLOU: --and that gives the appearance of a starry sky. A bit fanciful, I accept, but it's, it's a commonly used term.

FURNESS SC: Again, that's an example of there being some inflammation that doesn't have any effect, really, on--

WITNESS DUFLOU: Yes. Effectively, what you're seeing there is that there's been some stressful event of a period of time. How long, I can't tell, but probably a number of days or so. There is shrinkage of the thymus so minor cortical depletion being an example there, and the thymic weight decreases in size.

FURNESS SC: They're acceptable in terms of a definition of SIDS according to this?

WITNESS DUFLOU: An occasional starry sky type of macrophage is acceptable. You very, very frequently see them, to the extent that personally I wouldn't report on them unless it was obvious as a component of quite pronounced thymic stress.

FURNESS SC: Can I just turn to SUDI, which is a recent term, sudden unexpected death in infancy. The commentary on this, which is, if we move down the page, is Professor Byard's commentary, and it includes SIDS but am I right in thinking that SUDI is not a cause of death that a forensic pathologist will use because, in effect, it doesn't tell you anything other than that someone's died in an unexpected way and they're an infant, presumably under 12 months? Is that right, Professor Duflou?

WITNESS DUFLOU: Yes. My approach to using the term SUDI is it is a death prior to it being classified further as, for example, SIDS or not SIDS.

FURNESS SC: Dr Cala?

WITNESS CALA: So I agree with that.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Yeah, that is a nebulous term, but in the course of the discussions about definitions and age groups and things like that, one of the points that was raised was is there an upper cut off point age-wise and it's now become incorporated in the definition that yes, there is. One of my arguments at the time was if you're not going to call a condition SIDS at over 12 months, what are you going to call it? You're going to have to introduce a new term.

FURNESS SC: They have, haven't they?

WITNESS HILTON: And they have, and it's expanded.

FURNESS SC: It was to cover the entire field.

WITNESS HILTON: And it's expanded from over 12 months to perhaps "funny" deaths that outlie the normal parameters that occur at any age.

FURNESS SC: Which is what they've done with sudden unexplained death in children older than a year?

WITNESS HILTON: Absolutely.

FURNESS SC: The whole field is covered from the deaths of children?

WITNESS HILTON: Yeah, I suppose you put a bet on every horse in the race, yeah.

FURNESS SC: Which would be of great assistance to the researchers and the epidemiologists?

WITNESS HILTON: Yeah.

FURNESS SC: Is that a convenient time, your Honour?

JUDICIAL OFFICER: Yes. We'll adjourn for 20 minutes.

SHORT ADJOURNMENT

JUDICIAL OFFICER: Yes, Ms Furness.

FURNESS SC: Thank you. Professor Duflou, can I turn to you and your report. Have you got that in front of you?

WITNESS DUFLOU: Yes, I have yeah.

FURNESS SC: Perhaps we can have it on the screen? At page 50, under the heading of, "The role of a forensic pathologist in providing an opinion about possible causes".

WITNESS DUFLOU: Yes.

FURNESS SC: Over on page 51, that first paragraph, you say that,

> "Most lay people and I suspect most doctors, view the cause of death as expressed in a death certificate as a positive and incontrovertible finding. Unfortunately, the intellectual process used in determining the cause of death is very far from this. There are relatively few deaths where the cause can be stated without doubt."

WITNESS DUFLOU: Yes.

FURNESS SC: Do you want to expand upon that?

WITNESS DUFLOU: If, if you look at the majority of deaths, you have a number of disease conditions present. I'm talking purely of natural deaths right now. Most of which on their own when assessed at autopsy, don't really give you an indication they would without doubt have caused death. Now, an example of that is probably the most common cause of death that forensic pathologists deal with, and arguably the most common cause of death in Australia, ischemic heart disease or coronary artery disease; heart attacks to use a phrase in the common usage.

Now in those cases you have narrowing of a coronary artery supplying blood to the heart. You might find a bit of scarring in the heart. The narrowing of such that it's critical narrowing so, a person can without doubt die of that usually of a cardiac arrhythmia associated with it. Now, you don't find a thrombus or a blood clot in that coronary artery to have caused a myocardial infarction. You don't find any other cause of death in the body and you conclude that very likely the cause of death in this case is ischemic heart disease, coronary artery atherosclerosis and variations of, of those terms.

Now, in reality the person who had that coronary artery disease had it the day before, had it the week before, but was walking around and probably didn't know that he had that degree of disease. And yet, he's dead on your autopsy

table. And you've come up with this as the cause of death. And, if, if you actually look at it you've excluded other causes reasonably. You've got one disease condition which can reasonably cause death of a sudden type and on that basis you've given that as a cause of death.

But, the, the intellectual process of doing that is, is not a positive type process where there is any degree of certainty that this did cause death. It's more that there's nothing else so you land up with that.

FURNESS SC: And that's why you say there relatively few deaths where the cause can be stated without doubt?

WITNESS DUFLOU: Yes, correct and I've mentioned some here so if you have a heart attack and myocardial infarction there's rupture of the heart, there's no doubt that's caused death.

FURNESS SC: But if we come down a bit further on that page towards the end of that paragraph, you refer to SIDS.

WITNESS DUFLOU: Yes.

FURNESS SC: And you say that, "SIDS cases are a further category of cases where the diagnosis is based on the absence of any other cause of death."

WITNESS DUFLOU: Yes.

FURNESS SC: Then in the final paragraph on that page, if I can just have that expanded? You say that in the current cases that is the four Folbigg children, there's obviously a desire by all concerned to determine the cause of death and this should be on the basis of a combination of the histories provided; that is in respect of each death, and the objective findings in each case.

WITNESS DUFLOU: Yes.

FURNESS SC: You then go on to say what and I'll get you to put that in your words?

WITNESS DUFLOU: Well, I, I do not believe that an unequivocal cause of death can be given in any of the cases. Emphasising this is more often the case in coronial autopsy practice than not. And, it's on that basis that I've, in my report gone through the various cases and given my thoughts on what the cause of death is. There, there's in none of the cases is there a cause of death which can be stated without doubt. But that's not at all uncommon. That's, that's in fact more the norm.

FURNESS SC: I'll come back to the individual cases but thank you.

WITNESS DUFLOU: Yes.

FURNESS SC: Dr Cala, do you agree with Professor Duflou generally

speaking; that is if we move further back up the page where it's difficult to be unequivocal and have a positive finding? If we go up to that first paragraph.

WITNESS CALA: Yes, the examples that he's used are typical where a cause of death from any of those would be absolutely unarguable. And I agree with Professor Duflou, that's in the minority of cases in forensic pathology practice but I also want to make the point that although the autopsy is our tool, it's sometimes quite a blunt tool. And it's important to take into consideration the factors or the circumstances leading up to the death of an individual.

Now, sometimes, we don't know what the circumstances were. For example, if somebody is found, they live alone and they're found deceased in their house having not been seen for weeks or months. So, we have no history of what the immediate sequence of events medically was for that person, but we have to - we do an autopsy pretty well then in isolation.

But most of the time we're given a history, particularly in sudden deaths, where somebody had been alive and we've got a reasonable timeline of what medically might have been happening to that person with respect to say the heart attack example, chest pains that had been developing over a period of days, maybe some referred pain to the arm, the jaw with a bit of shortness of breath or tiredness, so we've got some history to do with the death that might or might not be relevant, that we can then apply to the autopsy findings so in conjunction then when we establish a cause of death, we're using not only the autopsy findings but we're looking at the circumstances if known.

FURNESS SC: Well that's evident from the discussion before the break about the SIDS definition, you've got to look at the clinical, the circumstances and the autopsy?

WITNESS CALA: Yes exactly, that's right.

FURNESS SC: I'll come to the four children in detail, but the final paragraph on that page that Professor Duflou just referred to when you said that he didn't believe there was an unequivocal cause of death in any of the cases, just dealing with that final conclusion for the moment, as I said I'll come back to the detail, do you agree with that?

WITNESS CALA: Yes.

FURNESS SC: Professor Hilton?

PROFESSOR HILTON: Yep I do.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: I don't want to be accused of splitting hairs, it all depends what you mean by an unequivocal cause of death.

FURNESS SC: What do you mean by unequivocal?

WITNESS CORDNER: Well I believe I could give you an unequivocal cause of death but it probably doesn't take us any further so for example, you could give the cause of death, but perhaps you don't want me to refer to any of the particular--

FURNESS SC: If you don't agree with that general proposition we'll definitely go to the detail of it, I was asking whether you agreed with that general proposition, you clearly have difficulties with it?

WITNESS CORDNER: I'll just qualify what I said by saying you can give more descriptive causes of death that encompass all of the possibilities, so you can put that cause of death 1(a) this death is due to, and then use an extended phrase, almost a sentence which encompasses everything.

FURNESS SC: So using Professor Duflou's words, that he doesn't believe that an unequivocal cause of death can be given in any of the cases is there a word other than unequivocal, that you would prefer?

WITNESS CORDNER: All-encompassing, I mean I think you can give an all-encompassing cause of death but I sort of believe, I agree with the sentiment I suppose.

FURNESS SC: Now I want to move to your report if I can, in a general sense, Professor Cordner at a couple of places in your report you referred to other circumstantial information and diaries, and in particular perhaps if we can have page 6 of your report on the screen. And further down the page, the second paragraph on the screen, the report then addresses, do you see that. And then you say it's important to note at this point that during the course of your report you try not to refer to circumstantial information such as the diaries, the assessment of that information is for others. Firstly, did you have access to the diaries before you prepared your report?

WITNESS CORDNER: No I've never seen the diaries.

FURNESS SC: So when you say you try not to refer to them, you didn't have them to refer to?

WITNESS CORDNER: Well I mean other people have mentioned them so I've seen I suppose secondary references but so in that sense I could've referred to other people's reference to the diaries but I think when the circumstantial information is controversial and not clear cut, and open to argument and different interpretations and yet goes to the you know, arguably goes to the heart of the thing I think that's a point where the pathologist keeps away from that, to avoid to try and keep the pathologist's contribution as sort of immunised from complication as possible.

FURNESS SC: So when you're referring to circumstantial information, you're clearly not referring to the various matters that are encompassed by the SIDS definition that are actually under the heading of circumstances?

WITNESS CORDNER: Well that's true and to that extent that's ambiguous and you're correct to point it out.

FURNESS SC: So is the fact that there's only the diaries that you believe shouldn't be taken into account?

WITNESS CORDNER: Well there would be other- I mean if there had been, if there is I don't know, any information about the mental health or behavioural characteristics of the carer, that would be sort of territory that I think pathologists would keep out of in terms of ascribing any significance to them in the cause of death or discussion about the death.

FURNESS SC: We can again come to the detail with respect to any child if it's relevant, but at this point of our discussion, can you point to any circumstances other than the diaries that obviously don't fit the definition if you like of circumstances in SIDS that shouldn't have been taken into account?

WITNESS CORDNER: Can I think of any circumstances.

FURNESS SC: Yes, you're referring to circumstantial information such as the diaries in your report--

WITNESS CORDNER: Well I think I've mentioned any characteristics of carers.

FURNESS SC: So mother or father?

WITNESS CORDNER: Yes.

FURNESS SC: Including mental health?

WITNESS CORDNER: Circumstances which could be I think termed irrelevant should be kept out, so--

FURNESS SC: Perhaps I'll ask you about them when we get to them, in respect of each of the children and you can point out the circumstances you're referring to?

WITNESS CORDNER: Yes. Can I make a comment however about the previous discussion?

FURNESS SC: Of course you can.

WITNESS CORDNER: Which I think I agree with the discussion that's been had when you asked about what's involved in coming to good conclusions about causes of death, I think a very useful contribution to that is on page 4 of Professor Pollanen's report.

FURNESS SC: Perhaps we can have that up. Yes, what part of page 4. This

is the note on the levels of evidence?

WITNESS CORDNER: Yes. And this is based on material in a well-known text book and it really just builds on the discussion that's already been had but teases it out perhaps into little categories that encompass basically the different situations we find ourselves in having to conclude causes of death and the first category is when there is definite fatal acute findings that imply, I would say indicate, the cause of death when correlated with the history and findings which exclude other things.

So an example of that would be Professor Duflou's ruptured heart from a myocardial infarction. So the heart has ruptured, there's a hole in the heart, all the blood can't be pumped round the body, it's just being pumped into the sack around the heart, so that is a reasonable example, it's not a perfect example because depending on how resuscitation occurred, that might complicate that assessment but that's a demonstration of a pathological finding that you can't be alive with. So that's the first category.

The second category is potentially fatal acute findings, that indicate a cause of death, imply the cause of death, and correlated with the history and findings which exclude other things. An example of that would be and keeping within the ischemic heart disease the common sort of causes of death frame, somebody who has an acute recent thrombus or clot in their coronary artery so the blood supply to the heart has been recently blocked, now you can survive that but in somebody who was walking down the street and seen to clutch their chest and fell to the ground and couldn't be resuscitated and you saw the acute thrombus, can cause death, correlates with the history, would be a reasonable good conclusion in that case that it did cause death so most people, everybody I think would conclude.

The third one is when there is severe narrowing of the coronary arteries by atheroma or fatty material, that most of us in the room have got to some extent in our coronary arteries but if it's severe it's accepted that it can cause sudden--

FURNESS SC: Because it's a chronic condition?

WITNESS CORDNER: --unexpected death but you don't see any acute thrombus on top of it you can't see that the atheroma has ruptured or ulcerated or--

FURNESS SC: So the word chronic is important there isn't it, it's a condition of some length of standing?

WITNESS CORDNER: That's right there's nothing - as Professor Duflou said, the person was walking around with it the week before. Then the fourth category, there are some findings which could explain death maybe, depending on the history and findings which exclude other things and then the fifth - so an example there might be there's not severe narrowing of the coronary arteries, maybe instead of 70 or 80% it's at 50 or 60% and maybe the

person was going on a long bicycle ride, so the history in that case is given more weight that it might have aggravated a potential to diminish the blood supply to the heart to the point where the person..(not transcribable)..

And finally, the category where there are no findings, and one is left without any pathology and left to rely on history and the fact that there are no other or that there are findings, no findings excludes a certain number of conditions.

FURNESS SC: Then you'd go number 5 to the circumstances and the clinical context that we've described before?

WITNESS CORDNER: And this is where a lot of debate occurs.

FURNESS SC: Just coming back to the other evidence, Professor Duflou did you have access to the diaries when you were preparing your report?

WITNESS DUFLOU: No I didn't no, I'm certainly aware of the diaries, I've seen some extracts of the diaries, I've seen commentary on the diaries, but I did not have access to them and I did not consider them while writing my report.

FURNESS SC: Dr Cala?

WITNESS CALA: No.

FURNESS SC: Professor Hilton?

WITNESS HILTON: I've never seen the diaries like my colleagues I have seen various excerpts published in various journals et cetera but at the time of the autopsy and nor subsequently have I actually seen the diaries.

FURNESS SC: Can I come now to the question of literature in relation to two or more children or sibling deaths? I think all of you are aware that that was a component of the direction that gave rise to his Honour's inquiry. Can I start with you Professor Cordner? You refer to it, on a number of occasions, in your report and perhaps if we can have your report on the screen. I think if we start at page 84.

WITNESS CORDNER: 84, did you say?

FURNESS SC: 84. Do you have your hard copy there, Professor?

WITNESS CORDNER: I've got - yeah.

FURNESS SC: Good. Now, it actually begins over at 83 - I'm sorry to say - the bottom paragraph, and you've looked at the individual deaths and in number 6 you're referring to the - Caleb, Sarah and Patrick's ultimately being considered together. And the last part paragraph, you say that it's at this point in the report that "the issue of multiple SIDS in one family needs to be considered. Most readers of this report" - your report - "would be aware of the

intense controversy that is attached to this subject, particularly in the UK". By that, I take it you're referring to the various debates arising from some legal cases and Dr Carpenter and Dr Bacon and others, that's what you're referring to?

WITNESS CORDNER: I think I'm - yes, I'm probably more referring to the, the cases than Carpenter and Bacon.

FURNESS SC: Thank you. You say that you're "aware that separate advice has been sought" - well, just leaving that to one side - and that it's "primarily been a statistical debate" which is outside your field. By reference to "statistical debate" are you referring there to percentages, if you like, or numbers as to the recurrence, you know, a trillion, 5%, 10%, that sort of thing?

WITNESS CORDNER: I don't - I think I'm referring more to the, the big numbers, you know--

FURNESS SC: Yes.

WITNESS CORDNER: --the study which involved 6,000 plus families, I think, with - Care of the Next Infant study and debate following that. I know that's Carpenter and Bacon, but - so, I'm really, I think, also referring to the sort of statistics that Professor Meadows got involved in. So, I'm trying to keep clear of that.

FURNESS SC: Right. Do you understand that since that time, the early 2000s probably up until 2007, the use of the Meadows statistics and Carpenter has pretty well been abandoned and, in fact, discredited? Do you understand that?

WITNESS CORDNER: Well, I'm not so sure that I understand Carpenter to have been discredited. I think there's debate and controversy in the literature and serious disagreement. I am not sure that the word "discredited" is, sort of, warranted. You, you may be able to explain that to me, but - in relation to some of the work of Carpenter.

FURNESS SC: Have you had regard to any research or opinion pieces since 2005, say, or maybe 2007 with Bacon, that indicates the controversy you've referred to? The "continuing"--

WITNESS CORDNER: Yes. Yes, I mean, I've - to be perfectly - you know, I've, I've become a little bit more familiar with it in recent times.

FURNESS SC: And if we asked you for some of those studies that indicated the controversy, you could--

WITNESS CORDNER: Yes.

FURNESS SC: --put your hands on them?

WITNESS CORDNER: Yes. Well, can I put my hands on them? But--

FURNESS SC: Not immediately, I understand that.

WITNESS CORDNER: Sorry?

FURNESS SC: Not immediately, but if I was to ask you for the studies or papers or articles that reflect that continuing controversy, you'd be able to help us?

WITNESS CORDNER: Well, I'm really thinking of what Bacon has written.

FURNESS SC: So, Bacon was, I think, 2007.

WITNESS CORDNER: And - okay, well, do you want me to try and explain what I think the controversy is, or not?

FURNESS SC: Well, as the Inquiry understands it from the work it's done, in 2007, Bacon was quite critical, among others - quite a few were critical of the Carpenter work and I think Bacon ended up concluding that, while there might be an increased risk, it was unquantifiable and probably dependent upon environmental factors. Now, he may have included genetic there, I can't recall, but certainly environmental. Do you consider that the debate continued in controversial circumstances after that, which was 2007?

WITNESS CORDNER: Well, I, I can't tell you whether it continued after that. What I've tried to get into my mind is what the content of that argument was between Bacon and Carpenter.

FURNESS SC: Professor Byard, in his 2018 publication, set out a large paragraph in which he sought to set out how the debate had worked out, and he came to the view that the best conclusion was that the risk of recurrence was small. Are you familiar with that?

WITNESS CORDNER: Yes, yeah.

FURNESS SC: Do you disagree with that?

WITNESS CORDNER: Well, look, I'm not going to - you know, I can't enter into a detailed discussion of, of that debate. But I do think I have an understanding of one aspect of the debate that--

FURNESS SC: And what's that?

WITNESS CORDNER: And that the argument between Bacon and Carpenter was largely, as I understand it, that Carpenter, in reporting the results of the Care of Next Infant program, categorised the deaths of subsequent infants as "Natural" or "Unnatural".

FURNESS SC: Whereas there was a role for "Undetermined" in that classification?

WITNESS CORDNER: And then, Bacon - absolutely. Bacon came in and said, well, that is misleading, and instead of - I can't remember the percentages, but instead of a small percentage of unnatural and a large percentage of natural, it should be a similar sized percentage of unnatural and then the naturals were divided into "Naturals" and "Unexplained". And, to my way of thinking, it isn't such a big difference when you look at it, because I think Carpenter had in his mind that he did not want to tar people with an unnatural label, because he was really saying that in there were the deaths that could be regarded as homicides.

FURNESS SC: Well, yes, and notwithstanding his desire to be more generous to and thoughtful of the parents. Nevertheless, it didn't represent great science, did it?

WITNESS CORDNER: Well, I'm not sure about that. I think that that's possible. I've never spoken to him, I suppose that's possible. But it's also possible that he's - he is thinking, "Well, I'm going to put cases into the 'unnatural' group if I've got a very high level of certainty about that", and everything else - and he's thinking courts and charges and things like that. So, I can see myself how he might have got to that point and he - I don't know, I haven't seen what he's said about the idea that it's split the - split the naturals into natural and uncertain, or unascertained or undetermined. I'd be really interested to know what he thought about that, whether he actually thought, "Oh, yeah, that's not - that's probably right" or--

FURNESS SC: So, is it the case that you don't accept Bacon's criticism of Carpenter?

WITNESS CORDNER: No, no, I didn't - I didn't say I didn't accept it.

FURNESS SC: No, that's what I'm asking. I'm asking you, Professor.

WITNESS CORDNER: I'm just saying that I'm not sure that it leads to the conclusion that Carpenter's been discredited, which I think you said.

FURNESS SC: I did. You don't accept that?

WITNESS CORDNER: Well, I haven't heard yet why he should be regarded as discredited. He's produced with - obviously, with colleagues, he's produced some - and even Bacon in one of his pieces said, "This is really important stuff". So, he began it - he began one of these pieces by saying that, "This is really important material", he said and it's - so, of course it's really important material and of course it's really important that we get the right learning out of it. So, it wouldn't surprise me if Bacon has regarded - sorry, Carpenter has regarded Bacon's contributions as valuable.

FURNESS SC: So, coming forward from 2005 to 2007 when that debate played out in a journal, in 2018, as I've said, we've got Professor Byard's recitation of the history of debate as he found it and concluding that the risk of

recurrence was small. I think I asked you before, do you accept that?

WITNESS CORDNER: Look, I do. I haven't been able to make my own assessment of that, so, I think I'm agnostic. So, I'm--

FURNESS SC: And you've said before--

WITNESS CORDNER: --I'm not - obviously, Professor Byard is Australia's expert in forensic - yeah, sort of overlap between forensic pathology and paediatric pathology and he's thought about all of this more than any of us in this room. So, his opinion is obviously very, very important.

FURNESS SC: Yes, and you'd defer to him on this particular topic?

WITNESS CORDNER: Well, I've - you know, maybe in the course of the next couple of days I might have enough time to see if I can come to a view about it myself. But I'm not in a position to argue with Professor Byard.

FURNESS SC: Thank you. Now, staying with this topic, on that page - in fact, the next page, see the one that's on the screen, you then deal with a number of matters including that paper co-authored by Opdal. Am I right in reading this, that your primary view in relation to recurrence is that it's most likely to have genetic factors and the genetic factors we don't - certainly at 2015, not enough was known about it?

WITNESS CORDNER: Look, I think, in writing this, I did have in my mind that it was important that - well, it's - I think it was just common sense that it was important to try and work out what had happened between 2003 and 4, and 2014, when I was writing this, that might alter the way those cases are looked at today. And it - I think nobody disagrees that the genetic aspect is one thing which has blossomed in the period since. So, I am trying to give a very introductory sort of evaluation of what the contribution might be, and I do that with a little bit of trepidation because I, I do that as a--

FURNESS SC: Forensic pathologist.

WITNESS CORDNER: --forensic pathologist.

FURNESS SC: I understand that. But, as you say, few would disagree with you that the main area of advance that might assist in understanding the four deaths is genetics?

WITNESS CORDNER: And the other thing that - and I, I - of course, in Victoria we have been through this mill ourselves. So, that's just a serendipitous, awful coincidence that - sorry, we've actually - one - another difference between 2003 and now is that there's another forensic jurisdiction which has had to think seriously about these issues in a real case.

FURNESS SC: Just a couple of matters in your report I wanted to understand the basis for, on this topic. If we go to page 34.

WITNESS CORDNER: 34?

FURNESS SC: 34, it's the top paragraph. You refer there to Gornall who was engaged in the debate between Carpenter and Bacon.

WITNESS CORDNER: I'm sorry?

FURNESS SC: That was engaged in the Bacon and Carpenter debate, if I can use such a loose term for it, you see you refer to him at the top of that page? Then you say, after your reference to Byard, that,

> "The overall point is that as far as the research literature is concerned, more than half the subsequent deaths in families who have sustained a SIDS death are natural deaths and the remaining one third are largely unexplained, not necessarily homicides."

The source of that is not immediately apparent although there are references that precede it. Is that essentially accepting the Carpenter approach?

WITNESS CORDNER: Do you mind if I just go back and read--

FURNESS SC: By all means and if you want to read more you can certainly do so.

WITNESS CORDNER: Do you want to go on with something else while I - no.

FURNESS SC: No, we'll happily stay with you. You refer to Carpenter on page 33.

WITNESS CORDNER: Yeah.

FURNESS SC: And we've discussed about that.

WITNESS CORDNER: I'll, I'll just read it if I may.

FURNESS SC: I'm sorry, certainly.

WITNESS CORDNER: Okay, so I think my last couple of sentences in that paragraph are simply my attempt to try and summarise the first part of the paragraph and to try and draw some place that one could come to rest that as far as I could see that, "more than half of subsequent deaths in families who have sustained SIDS deaths are natural deaths. And those remaining, one third are largely unexplained not necessarily homicides." So--

FURNESS SC: It's your understanding of where the literature was at in 2014? Is that right?

WITNESS CORDNER: I wouldn't be so bold as to say that's where the literature in toto was at in 2014 but I'm just trying to get to the headlines if I can

and that was where I got to.

FURNESS SC: Of course, the Byard publication I've referred to was published last year.

WITNESS CORDNER: Yes.

FURNESS SC: We might make that available for you so that you can have a look at that material.

WITNESS CORDNER: Thank you.

FURNESS SC: We'll do that at the break. Back to 33, you note the Carpenter report as also being called seriously misleading, which probably falls short of my discredited do you think?

WITNESS CORDNER: Well, I think I used the word misleading when I described what the controversy was.

FURNESS SC: Thank you. Just again, still on this topic. We can go to page 90 of your report.

WITNESS CORDNER: 90?

FURNESS SC: Yes, thank you. This is the forensic pathology conclusion about the Folbigg deaths. You begin in that second sentence by saying, "There's no merit in forcing certainty where uncertainty exists." Which is consistent with what was said this morning about the difficulties in being unequivocal. Is that right?

WITNESS CORDNER: Yes.

FURNESS SC: Then moving down, you say in the last paragraph, while referring to considering the deaths of Caleb, Sarah and Patrick as ALTE, you say, "The likelihood that multiple SIDS in one family are due to natural causes." I'm not entirely clear from your report where you draw the conclusion that the likelihood is that they're due to natural causes.

WITNESS CORDNER: Well, I think that's what we've been discussing in previous discussion--

FURNESS SC: It seems to be based on Carpenter's view?

WITNESS CORDNER: Well, Carpenter's view taking into account Bacon. And, and yes, sorry?

FURNESS SC: We're to understand the reference to likelihood being a reference back to that research that we've discussed 2005 to 2007?

WITNESS CORDNER: And, and what we were just discussing on page 33/4

yes.

FURNESS SC: Which is essentially that debate as I understand it. I'm sure I'll be corrected if I'm wrong.

WITNESS CORDNER: Yeah.

FURNESS SC: Then further down that paragraph, you say that, "While both situations are rare" - and that's in relation to the family - "two or three unexplained natural deaths in one family probably occur more frequently than the same number of hidden homicides."

WITNESS CORDNER: No, I think that's just saying the same thing.

FURNESS SC: Is it?

WITNESS CORDNER: Well, it's--

FURNESS SC: You're referring to--

WITNESS CORDNER: --just saying, that is just the same as saying the likelihood that multiple SIDS in one family are due to natural causes. That's the same as saying, "While both situations are rare, two or three unexplained natural deaths in the one family probably occur more frequently than the same number of hidden homicides." I think they're pretty equivalent statements.

FURNESS SC: It's not that we understand that to mean that there's any research in relation to numbers of hidden homicides. That is by hidden homicides you mean the opposite of natural causes, is that right?

WITNESS CORDNER: No, I don't mean that that's the opposite to natural causes. I mean that that's hidden homicides such as rare, you know if, if, the case that we're here about today, they're homicides, they're hidden homicides.

FURNESS SC: As long as I'm understanding correctly, the two propositions I've taken you to in this paragraph should be considered in the context of page 34 and your reference to the debate there and that's the source of the material for your conclusions?

WITNESS CORDNER: Yeah, well, and if I, I, if I can just allow myself or you would just allow me the opportunity to--

FURNESS SC: Of course, I will.

WITNESS CORDNER: --correct that but I'm happy to proceed on that basis at the moment, but I'll read my over lunch.

FURNESS SC: Certainly, and we'll give you Professor Byard's publication seems to be the most recent that does some summary of this but again, if others have more recent I'm sure they'll be able to provide them to you as well.

Thank you. Now, swivelling to the other side of the room and staying with this topic. Again, as you understand the Inquiry's focus by virtue of the direction, is on, advances, research in the area of one or more, three or more children having died of unidentified natural causes in the one family; Professor Duflou, what would you like to say about that topic?

WITNESS DUFLOU: I suppose, when, when it comes to medical statistics, I try to stay quite clear of it because my understanding of statistics generally and the use of statistics in medicine specifically is, is at best rudimentary. I, I think if you look at one of the developments though, and I'm probably expressing this very badly, as far as statisticians are concerned but effectively, what used to be done was that let's say SIDS happens in one in 1000 infant births. If there's a second SIDS in the family, the chances of that happening would be one in 1,000,000.

If there was a third, the chances would be one in a billion, one in 1,000,000,000. So, you multiply the numbers together. Now, I, I, I think Professor Meadow very much found out to his--

FURNESS SC: Discredit I think you can say.

WITNESS DUFLOU: Discredit, yes, I was going to say detriment. That that's not the way you do it. The chances of a SIDS happening in a family is one in 1000. The chances of a second SIDS happening in a family is one in 1000. The chances of a third SIDS happening in a family is one in 1000. You don't, statistics or probability has no memory I've been told. So, you cannot multiply the numbers together. And, and I think that, that is a great advance in understanding. It certainly is an advance that I take into consideration. And I think it's a very important one.

Concerning the controversy between Carpenter and Bacon; to me it's almost peripheral to that major advance that I've just spoken about in terms of understanding by forensic pathologists at least. In that they're looking at effectively is the chance of the second case being natural or non-natural is that 80%, is it 50%, is it 30%? And, I, I think people have argued backwards and forwards in relation to those cases. As with a lot of research, these are not clean cut cases where it's obvious. There's, there's a lot of difficulty around the edges and a lot of it relates to definition of exactly what is meant in those studies by the term natural, by the term non-natural and by the term filicide.

And, you know you go through the material. For example, by, by Gornall who's highly critical. You know and I, I can understand the viewpoints but to me it's not a critical aspect of the statistical analysis compared to the first point that I make.

FURNESS SC: Leaving aside the statistical analysis on the basis that you're not that comfortable with it and I'm sure that discomfort is shared and moving to Byard because it is a 2018 publication and he is as Professor Cordner said, extremely well-regarded if not foremost in this field.

WITNESS DUFLOU: Yes.

FURNESS SC: The conclusion he reached was that it was small and we might have that up on the screen. It's exhibit D. And it's page 27. This is the passage I quoted in the opening. Perhaps Professor Cordner, that's part of the document I was going to give you.

WITNESS CORDNER: Sorry, did you ask me a question?

FURNESS SC: No, I'm just drawing your attention to the document on the screen, which is beginning on page 26, the final paragraph under the heading, "Sibling deaths." And then going over to page 27, up to but not including the heading, "Mechanisms." It's a long paragraph. Which is a little bit difficult to read. There you go.

WITNESS DUFLOU: I think that's not unreasonable at all. I think there's no argument that some, some unexpected deaths in infancy, which on the face of it appear to be SIDS have a genetic basis. In which case, they would not be called SIDS in my view. They would be called let's say long QT syndrome or cardiac arrhythmia due to long QT syndrome as a cause of death. I, I certainly have no, no issue with what he says there.

FURNESS SC: Dr Cala?

WITNESS CALA: I don't have any issue.

FURNESS SC: Professor Hilton?

WITNESS HILTON: The statistics adopt the understanding or misunderstanding of SIDS literally from day one.

FURNESS SC: Which is I think why Professor Duflou rightly said, put it to one side?

WITNESS HILTON: Yeah. A bit more recent history is the analyses of the statistics published prior to and subsequent to 2003 and there have been three studies quoted in the paper here and I think another study which emanated from Hong Kong which I think I may have supplied to the Inquiry. The end result I think very neatly summed-up in the last paragraph or last sentence of the last report which I alluded to, it's Latin, but the translation is "Statistics heal thyself." I would agree with Roger Byard's statement that it would appear to be some slight risk for subsequent child to die of SIDS, one child having already died of SIDS, given the total lack of understanding, subtotal lack of understanding that we enjoy as to what SIDS is.

FURNESS SC: Professor Cordner would you like to take some time to think about this further or are you happy to participate in the discussion?

WITNESS CORDNER: Perhaps I'll just take a little bit more time to think about it if you don't mind.

FURNESS SC: I'm going to turn to a different topic and this is a topic that you have written about at length Professor Cordner in your report, and that is the word asphyxia and the meaning of the word asphyxia and because you have written about it at length and it is there for us to read, I will come back to you on that topic and perhaps I will start with you Dr Duflou, you've read Professor Cordner's report?

WITNESS DUFLOU: Yes I have.

FURNESS SC: You understand the difficulties he has with the word asphyxia?

WITNESS DUFLOU: Yes I do.

FURNESS SC: And to the extent it was used in the trial, if you could put that to one side, and deal with asphyxia as you consider it to be today, perhaps you could provide a definition of asphyxia for the Inquiry?

JUDICIAL OFFICER: Perhaps he needs to take that on notice.

WITNESS DUFLOU: I think it's a fairly basic and all-encompassing term, accepting that in fact asphyxia, in terms of the derivation of the word in fact relates more to cardiac than respiratory, to me it relates to any condition which results in the insufficient supply of oxygen to the body. Now to a certain extent that's so broad as to be almost meaningless, but effectively that would encompass all the various forms of asphyxia that could be present and it extends all the way from abnormal atmospheres to obstruction of airways, to difficulties with lung function and various poisonings, as an example cyanide poisoning.

FURNESS SC: So is it the case that asphyxia is lack of oxygen, if I can be even briefer, the issue is what caused the lack of oxygen, rather than in fact asphyxia in itself being an explanation as to cause?

WITNESS DUFLOU: Yes I think in the end you probably end up using asphyxia in as meaningless a way as the term cardiac arrest, in that it doesn't provide any information really in terms of what happened.

FURNESS SC: Without knowing why somebody was asphyxiated?

WITNESS DUFLOU: Yes correct.

FURNESS SC: So the issue is why someone was asphyxiated rather than the state of asphyxiation which means you don't have enough oxygen?

WITNESS DUFLOU: Yes, yes on its own it's to me, it's not a term that should be used, at least in the cause of death statement, you can certainly have qualifiers to that term, as an example, positional asphyxia, but on its own I don't think it serves much purpose.

FURNESS SC: Dr Cala?

WITNESS CALA: I agree with that.

FURNESS SC: Professor Hilton?

WITNESS HILTON: In the form of the death certificate, if asphyxia is to be used as 1(a), there has to be a 1(b), which is due to and so on and so forth.

FURNESS SC: Which is the same point?

WITNESS HILTON: Yeah.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: Well I'll just be repeating what I've written, but I think Professor Duflou has arrived at the same point a lot more quickly, but as I sit here I do not, I cannot frame a definition of asphyxia in any sort of sensible forensic pathology usable way and it really is an interesting example of a word in common usage which has found its way into a technical domain, and there's a lot of history to that and an interesting sort of development in itself, but it is not a word that advances anything used on its own it is not a medical diagnosis, no doctor in the world, or pathologist can diagnose something properly and call it asphyxia, so used by different people in different ways, it's used in different ways around the World, it's used differently by different lay people, it's used differently by different pathologists, so from a technical point of view and from a words to try and clarify what's going on, it should be abandoned.

FURNESS SC: Just coming back to you Professor Hilton, with the first line on a death certificate being asphyxia and then the second line having to be due to, if in fact it was not known, the cause of the asphyxia, would it be acceptable to say asphyxiation due to unknown causes, acknowledging that it's not in itself a diagnosis if you like or a cause of death, but you don't know what caused it, is that acceptable?

WITNESS HILTON: To whom.

FURNESS SC: To you?

WITNESS HILTON: I would be very reluctant under almost all circumstances to accept asphyxia as an absolute stand alone, unless there had been appropriate testing which is darn nearly impossible to show that in fact there was a terminal lack of oxygen in the blood, being delivered to the blood and then we get into of course the 1(b).

FURNESS SC: Why?

WITNESS HILTON: The why.

FURNESS SC: So turning to a similar term that Professor Cordner has spoken or written about, an acute asphyxiating event, does that--

WITNESS CORDNER: Acute catastrophic asphyxiating event.

FURNESS SC: Acute catastrophic asphyxiating event, does that fall into the same area that you've described with asphyxiation, it's certainly got a bit of hyperbole about it, but it's effectively the same problem?

WITNESS CORDNER: Well it's a seriously aggravated version of the same problem yes.

FURNESS SC: Would each of you agree with that, Professor Hilton?

WITNESS HILTON: Yep.

FURNESS SC: Yes?

WITNESS HILTON: Yes.

FURNESS SC: Dr Cala?

WITNESS CALA: Yes.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Yes.

FURNESS SC: On that note your Honour--

JUDICIAL OFFICER: We'll adjourn until 2 o'clock.

LUNCHEON ADJOURNMENT

JUDICIAL OFFICER: Yes, Ms Furness.

FURNESS SC: Thank you, your Honour. Now, we made short shift of "catastrophic asphyxiating event", unless there's anything anyone else wants to say about that term? No?

WITNESS DUFLOU: No.

FURNESS SC: No?

WITNESS CORDNER: Well--

FURNESS SC: Yes?

WITNESS CORDNER: Just to make sure that everybody understands that, if the prosecutor was asking whether there was evidence that a particular

medical diagnosis - catastrophic acute asphyxiating event, was present, it's an unanswerable question because asphyxia, as we've said, is meaningless and so it was a question that is empty.

FURNESS SC: Thank you. Can I turn to "mechanical asphyxiation"? I think there's agreement that mechanical asphyxiation includes smothering, is that right? Yes, Professor Duflou?

WITNESS DUFLOU: It, it, it does, under some classifications. I'll, I'll accept it, yes.

FURNESS SC: Dr Cala?

WITNESS CALA: I think "smothering" is a specific term that I wouldn't put under mechanical asphyxia.

FURNESS SC: You wouldn't?

WITNESS CALA: I wouldn't, no.

FURNESS SC: Where would you put it?

WITNESS CALA: Mechanical asphyxia, to me, is a broad term which describes an event or events in which there's compression of the chest in particular, leading to an inability of a person to breathe and then for them to become asphyxiated by that mechanism. So, I think "smothering" is a specific term that is separate from "mechanical asphyxiation". But if, as Professor Duflou has said, as - you could use it as a broad term, then smothering may be used as a type of mechanical asphyxia because it's a - the mechanical application of something on the outer airway that's led to the inability to breathe, and not because of compression of the chest.

FURNESS SC: Professor Hilton?

WITNESS HILTON: I don't think the terms "smothering" and "mechanical asphyxia" have got any particular resonance at all. I think they're two completely different mechanisms.

FURNESS SC: Do you agree with Dr Cala--

WITNESS HILTON: I do.

FURNESS SC: --the way in which the mechanism of smothering could in fact become mechanical asphyxiation?

WITNESS HILTON: Never say never, but I don't think it's particularly appealing.

FURNESS SC: Okay. Now, Professor Cordner, I think, from your report, you don't have any doubt that mechanical asphyxiation includes smothering, do

you?

WITNESS CORDNER: No, I have included it there, but the term "mechanical asphyxia" is only this much better than "asphyxia" itself.

FURNESS SC: You might just say that again.

WITNESS CORDNER: The term "mechanical asphyxia" is only a little bit better than "asphyxia" itself. So, in other words, you don't--

FURNESS SC: Doesn't it provide you with a manner in which the asphyxiation may have occurred, that is, mechanical?

WITNESS CORDNER: It's, it's a - it's a - it's a category, I suppose. It's - but itself is also not diagnosable. There is no sort of process where you go through where you say, "Oh, well, we've discovered mechanical asphyxia here, let's see which sort it is". It doesn't work like that. You diagnose the particular form and you go to the books and you see it's under the heading of "mechanical asphyxia".

FURNESS SC: Well, perhaps if we can just have page 48 of your report on screen? And you there record a classification of the conditions grouped under mechanical asphyxia, do you see that?

WITNESS CORDNER: Yes.

FURNESS SC: And you've got the external forms and the internal forms, and under the external forms, paragraph 2, dot one is "smothering", which is "compression or obstruction of the mouth and nose". Which I think, Dr Cala, is what you were effectively referring to?

WITNESS CALA: Yes.

FURNESS SC: That's right?

WITNESS CALA: That's right.

FURNESS SC: So, if you look at what Professor Cordner has said, would you agree that "smothering" by way of "compression or obstruction of the nose and mouth", can be grouped under the term "mechanical asphyxia"?

WITNESS CALA: Yes, using that classification, yes.

FURNESS SC: Thank you. You'd agree with that, Professor Duflou?

WITNESS DUFLOU: Yes. And, importantly, using that classification, I'm - I, I reference in my report a paper by Anny Sauvageau and Boghossian, where they look at the various classification schemes for asphyxia. And, in fact, one of the classifications that's examined has smothering under mechanical asphyxia, while the others, in general, appear not to. So, it's one way of doing

it. Mechanical, in this instance, I'm assuming means something that's physical.

FURNESS SC: Yes.

WITNESS DUFLOU: You know, that's tangible.

FURNESS SC: Yes. Well, that's how I understood it to mean.

WITNESS DUFLOU: Yeah. But in most forms of mechanical asphyxia - as, I think, generally understood, bar forensic pathologists - it - it's an object, for example, on the chest, compressing the chest.

FURNESS SC: But this, in fact, is not the chest?

WITNESS DUFLOU: No. No, correct.

FURNESS SC: Thank you. Do you accept that, Professor Hilton?

WITNESS HILTON: Pretty well.

FURNESS SC: Now, there was evidence about this and there's discussion, I think, in each of your reports about this, but I am right in saying that smothering can leave signs and smothering does not have to leave signs? Professor Duflou?

WITNESS DUFLOU: I would agree with that.

FURNESS SC: Dr Cala?

WITNESS CALA: Yes.

FURNESS SC: Professor Hilton?

WITNESS HILTON: I'm sorry, could you just repeat what you said before?

FURNESS SC: Smothering can leave signs, but it also may not leave signs?

WITNESS HILTON: Yes.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: That, that's a very broad statement you've made, so, yes.

FURNESS SC: Now, if smothering was to leave signs, what signs, Professor Duflou, would you see?

WITNESS DUFLOU: I, I think the major signs that you'd be looking for is evidence of something having obstructed the external airway. So, in the form typically of a hand or similar around the face, with injury externally around the,

the nose and mouth and injury internally, generally around the mouth. You may also see other injuries as a result of a struggle. But, but, in, in - you, you might have noticed that I haven't mentioned "and you would see signs of asphyxia", because those are so broad as to essentially be meaningless.

FURNESS SC: I didn't expect you to say that, Professor Duflou.

WITNESS DUFLOU: Yes, thank you.

FURNESS SC: Just in terms of the external signs of smothering, you've said there may be marks around the mouth and nose?

WITNESS DUFLOU: Yes.

FURNESS SC: And that would depend upon whatever was used in the act of smothering as to whether that had any features of it that were left behind, you know, a ring for example or a button or something?

WITNESS DUFLOU: Or a hand, yes.

FURNESS SC: Or a hand?

WITNESS DUFLOU: Yes, certainly.

FURNESS SC: And, in terms of internal signs, are you referring to the child having bitten the inside of their cheek or something like that, or are you referring to signs that have been caused on the interior of the mouth other than by the child doing something?

WITNESS DUFLOU: Well, well, you've got that, plus you've got the potential for seeing petechial haemorrhages as well, excepting that they are relevantly uncommon in such cases in infants.

FURNESS SC: So, you've got marks around the nose and mouth, depending upon what was used and presumably the force, and internal signs that might be generated by the child or, as you say, haemorrhages or one sort or another?

WITNESS DUFLOU: Yes, correct.

FURNESS SC: Dr Cala, can you take that any further?

WITNESS CALA: No, I agree with that.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Yeah, again, I agree. But the example is put here, "plastic bag asphyxia". Now, my experience of plastic bag asphyxia in the people I've examined is absolutely no trace whatsoever. Whereas, if - I can imagine circumstances where something such as, say, a fabric with a coarse

weave or a definite pattern to it were applied with sufficient force to somebody's nose and mouth, that may well leave the pattern of the, the weave. If it were applied with even greater force, there might be some evidence of bruising where that force was applied.

FURNESS SC: Professor Cordner, can I come to you to the interior of the mouth and what might be seen if a child was smothered?

WITNESS CORDNER: Well, I--

FURNESS SC: That have you seen in your practice?

WITNESS CORDNER: Yes. Well, that was going to be the introduction to my answer, which is that diagnosed smothering is very, very unusual, rare and, and it's rare within a group of cases that all of us see relatively infrequently. So, you said "in your experience"--

FURNESS SC: No, I said in your practice--

WITNESS CORDNER: In my practice, okay.

FURNESS SC: --but I will expand it, after you answer that question.

WITNESS CORDNER: Okay, okay. I'm not sure that I have ever, myself, had an incontrovertible, you know, case where I've diagnosed smothering in an infant. So - but I have had cases where I have diagnosed smothering in adults and, and I know - and I've included a specific case report in my report of a case of smothering in a very young child. And the difference is that, as teeth develop and as the skeleton matures then there is more counterforce, if you like, to whatever the smothering force is, to result in injuries on the inside of the mouth from teeth and bruises on cheeks or even eyebrows. If it's a broad compressing force, then the likelihood of injuries in these places starts to increase.

FURNESS SC: So, it would depend upon--

WITNESS CORDNER: But - sorry, just to--

FURNESS SC: Certainly, sorry.

WITNESS CORDNER: But there are cases in the literature - which I think I've included in here - where even in infancy, prior to the development of teeth and the maturation of the skeleton, where some of these things have been found. And as Professor Duflou mentioned, some of the more general signs of petechial haemorrhages, particularly on the eyes and under the eyelids, have been detected as well.

FURNESS SC: So, is it the case that, broadly speaking, whether there are signs will depend upon the force used and whatever instrument or implement or part of the body was used to inflict that force?

WITNESS CORDNER: And the time taken to maintain that force, I think.

FURNESS SC: Because the longer one maintained it, one would expect there would be marks, rather than less time was taken?

WITNESS CORDNER: Yes. I'd be interested just to ask, because I think a lot of people might be surprised but, how long are you thinking it takes to smother an infant, let's say, with a pillow?

FURNESS SC: Fortunately, I'm not a forensic pathologist. How long does it take?

WITNESS CORDNER: No, no, I'm - I'd just be interested to know what the general population of people think.

FURNESS SC: Well, there was a deal of evidence given about it and it varied. So, there was evidence before the trial as to how long it took and there's evidence in various reports as to what people think as to how long it took. So, how long do you say it took?

WITNESS CORDNER: Well, one of my bits of learning in preparing for this is that one of the authors has - with some reasonable evidence it seems, reckons that it's 60 to 70 seconds prior to the development of serious brain damage. So, that's--

FURNESS SC: Does that sound right to you?

WITNESS CORDNER: Well, it does sound sort of right, yes.

FURNESS SC: Does anyone have a view about the time taken, Professor Duflou?

WITNESS DUFLOU: Well, well I think I have to preface this that, by saying that obviously it's not an experiment that can be done. But I'm at least looking at adults, and I accept that babies are not miniature adults but I think it's fair to say that most of us in this room if we absolutely had to could hold our breath for a minute. It would be difficult for most of us, including myself rest assured. But after that minute, you've taken a deep breath and we'd presumably have no brain damage. You've, in fact got to get to the stage of your heart stopping and I think that takes many minutes longer.

The, probably the, to me the best way of equating it is to look at anaesthetic accidents where instead of a person being given oxygen, they have for example been given carbon dioxide or nitrogen, and those people take a surprisingly long time to die. You know, before their heart will stop. It's generally said that you can have four minutes without oxygen before you get brain damage. It takes significantly longer before you get cardiac damage as well.

FURNESS SC: Can you turn your mind to children?

WITNESS DUFLOU: It, it's known that very young babies, so in the perinatal stage that they tend to be more resistant to hypoxia. Now, I, I think there's good reason for that in that they go through a very traumatic process in terms of being born. But I don't know what the numbers are for young babies let's say from 19 days onwards. I just don't know what those numbers are.

FURNESS SC: Dr Cala, can you help us?

WITNESS CALA: No, I, I don't want to put a figure or a time on the amount of time taken but except to say that if there has been obstruction of the external airways, the nose and the mouth a person or an animal for example, a dog. If you, and I haven't done this but I've heard of this, where people grab them the muzzle of a dog and include the nose, because they're predominantly nose breathers, that dog will become distressed within seconds. And I think the same probably applies to human beings, whether they're babies or they're adults, that the immediate obstruction of the external airway and an inability to inhale and exhale will immediately cause difficulties for that person.

But how long that process takes in any one case to smother to the point of death, I don't, I don't know.

FURNESS SC: Professor Hilton?

WITNESS HILTON: I'm going to agree with the three, three opinions expressed.

FURNESS SC: I think Professor Berry at trial in relation to Patrick, in relation to his ALTE I believe said that suffocation causing the kind of severe brain damage suffered by Patrick in the ALTE would take a few minutes.

SPEAKER: That's about the third time today we've got an interference by the radio or something. So, there's--

FURNESS SC: That was the prison by the sounds of it. Does that mean we've lost Ms Folbigg? Sorry, your Honour would you like me to pause?

JUDICIAL OFFICER: Yes, that mightn't be a bad idea. Where in the literature did I read of some expression of a nurse in a hospital smothering a baby and it was caught on video so that somebody expressed a view about how long it was on the basis of that?

FURNESS SC: We'll find out. It's certainly the case that before the trial and in reports created in relation to the trial, a number of forensic pathologists formed an opinion as to how long and it varied from 30 or more seconds to minutes.

JUDICIAL OFFICER: Yes.

FURNESS SC: And there may well have been one occasion where it was

actually watched and timed as opposed to speculative based on the size of children and what's known about breathing patterns.

JUDICIAL OFFICER: Yes, I thought it wasn't that it was watched while it was happening. It was just caught on video and it was watched later.

FURNESS SC: Well, perhaps just while we're waiting, is it the case then from the evidence of each of you that it's not known to any scientific certainty however it would be in the range of, for a child, let's say of 19 days to two years, to be 30 or more seconds up to a few minutes depending upon a whole range of circumstances? Is that a conclusion we can draw?

WITNESS CORDNER: Well, I, I think there is some, within that general conclusion which I wonder about 30 seconds but within that general, well within that general conclusion. I do think there is more specific evidence based conclusions about the length of time it takes for particular outcomes based on physiological testing during events that actually caused deleterious outcomes. So, I'm just trying to find that.

FURNESS SC: Thank you.

WITNESS CORDNER: And so, I'm not disagreeing with the breadth of your general comment but I'm just saying within that there is actually some more specific evidence based conclusions which can be drawn.

FURNESS SC: I'm sure that's right. I'm sure all would agree with that, there would be that available. But for current purposes and leaving aside what that might be precisely, I think it's generally accepted that we are in the vicinity of if not 30, 30 to 60 seconds and minutes.

WITNESS CORDNER: Well, personally I'd be a bit surprised and I wouldn't really say that you could smother a, a child, an infant to death in 30 seconds.

FURNESS SC: What would you put as the lower range--

WITNESS CORDNER: Well--

FURNESS SC: --if it's not 30?

WITNESS CORDNER: I, I, I don't sort of talk about that. I talk about the 60 to 70 seconds I mentioned was what I thought was the evidence based--

FURNESS SC: What was the lower number, the?

WITNESS CORDNER: The 60 to 70 seconds that I mentioned was what I thought was the evidence based time it took to produce a measured actual bad outcome of an obstruction to airways.

FURNESS SC: Professor Cordner, I misheard you and thought you were saying 30 to 70 seconds but 60 to 70 seconds, I understand.

WITNESS CORDNER: Yeah, well okay.

FURNESS SC: But now, I think it was agreed that a child may be smothered and there may be no signs left or no signs depending upon the force, type of material et cetera? Could one form the view that a child was smothered in the absence of any signs? Dr Cala?

WITNESS CALA: I think the, the forensic literature knows that there have been quite a number of cases of people including infants of course that have been smothered that have left no trace. So, it's difficult though to say that any one child may or may not have been smothered when there are absolutely no physical signs. What that's then based on to make that diagnosis is an examination of the circumstances, just like any other investigation; examination of the circumstances, what we know about the environmental factors surrounding that child's death, about the people who were with the child at the time and any other factors that might be considered important.

But it is, it is possible. The literature says it's possible that smothering can occur and leave no physical sign.

FURNESS SC: Did you want to add anything Professor Hilton?

WITNESS HILTON: Just that one may suspect it but it's almost, almost impossible to prove.

FURNESS SC: Yes, I think the trial judge described it as indistinguishable, smothering from SIDS. On the basis I presume of the evidence before him. You would accept that each of you?

WITNESS HILTON: Mm.

WITNESS CALA: Yes.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: I'd accept that in a significant percentage of cases but not in all cases.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: Sorry, can you repeat the question?

FURNESS SC: The trial judge described the evidence as being that it is virtually indistinguishable smothering from SIDS?

WITNESS CORDNER: Well, it can be indistinguishable but as, as what Professor Duflou was just saying, but in, in, as it clearly can be distinguished.

FURNESS SC: It can be if there's marks you mean?

WITNESS CORDNER: If there are injuries related to the smothering and/or some of the general signs such as petechiae in the eyes or under the eyelids which would I think for most people, remove, remove the death from the sort of SIDS category into the uncertain, unascertained group. But I think there, there's another whole discussion to be had about whether or not a forensic pathologist in the absence of any signs at all could ever conclude that suffocation had occurred.

FURNESS SC: In your report, on page 24, at footnote 7, and you may want to see what that footnote is attached to before you answer this, the footnote is attached to the paragraph above the table, so if we could see the whole thing so that you can see what the footnote is attached to? Just - can you just make it smaller so we can see the whole thing, thank you. You're referring to data available in Victoria. You, in your footnote say, "However people use the term SIDS, smothering is not excluded on forensic pathology grounds when SIDS is the diagnosis."

WITNESS CORDNER: Yes

FURNESS SC: Would each of you agree with that? Professor Duflou?

WITNESS DUFLOU: Yes, I'm accepting that in category 2 SIDS under circumstances, the sentence there is, "Mechanical asphyxia or suffocation by overlaying not determined with certainty."

FURNESS SC: Dr Cala?

WITNESS CALA: Well, I agree with that sentence. The one that you've quoted however--

FURNESS SC: The one that Professor Cordner has quoted, yes.

WITNESS CALA: I agree with that.

FURNESS SC: Do you have anything to add Professor Hilton?

WITNESS HILTON: Yeah, I agree with it subject to the fifth part of it, "However people using the term SIDS, smothering is not excluded under forensic pathology grounds when SIDS is the diagnosis." And then the, the reference to, to Henry Krous I'm not so sure that I know what that was so I can't really agree or disagree.

FURNESS SC: No, it was more the first sentence, unless Professor you wanted to explain the second sentence?

WITNESS CORDNER: I was trying to find where it--

FURNESS SC: "This overlap between natural and unnatural causes being caught in the rubric of SIDS is explicitly captured on the more recent

categorisation of SIDS by Krous." That's the 2004 definition. That may well be what Professor Duflou is referring to as SIDS 2.

WITNESS CORDNER: Yes, so, it relates to what we were talking about before; the categorisation. Do you want me to explain that?

FURNESS SC: Perhaps if we can have the SIDS definition up on the screen, I think that might provide some help. If we go to category 2 SIDS heading and circumstances of death, "Mechanical asphyxia or suffocation by overlaying, not determined with certainty", now that could be read two ways, one is mechanic asphyxia and the other is suffocation by overlaying, that's two separate matters as opposed to one as a subset, how do you read it Professor Duflou?

WITNESS DUFLOU: Look it's a classification - a sentence that has caused me trouble over the years, so to begin with I'm concerned with the last two words, "with certainty." My approach I must say for category 2 SIDS and differentiating that from let's say overlaying or some other form of mechanical asphyxia, if in my view there is good evidence for either overlaying or a form of mechanical asphyxia, for example in some, entrapment of a child in a cot as an example, then I will not use SIDS category 2, even though it might not have been determined with certainty.

FURNESS SC: Because it's an accidental suffocation?

WITNESS DUFLOU: Yes, to me it's an accidental death, and accidental deaths in my mind are removed from SIDS.

FURNESS SC: Dr Cala did you want to say anything about that?

WITNESS CALA: No but in regard to that sentence, my understanding of it was that either mechanical asphyxia or suffocation by an act of overlaying is not determined with certainty.

FURNESS SC: Wouldn't that render your finding undetermined, as opposed to SIDS 2, if it was mechanical asphyxia, not determined with certainty, how could you find SIDS, even if it's SIDS 2 rather than undetermined. Professor Duflou you're shaking our head?

WITNESS DUFLOU: I don't think you can give it as SIDS 2 but for that matter I wouldn't give it as undetermined either.

FURNESS SC: What would you give?

WITNESS DUFLOU: If it was mechanical asphyxia of some type I would give it as that, if it was overlaying and there was good evidence of overlaying because the last thing you'd want to do in a terrible situation of a parent sleeping with a child and there's a possibility of overlaying, I would not go as far as saying this is overlaying but if there was very good evidence of overlaying then I would go and call that overlaying.

FURNESS SC: But if you called it mechanical asphyxia would you then have to go to the next step and say what was the mechanism by which the asphyxia occurred?

WITNESS DUFLOU: Oh yes, I wouldn't use the words mechanical asphyxia, I would for example use neck compression or positional asphyxia or some term like that and presumably then in my discussion part of my report, explain what I actually meant by that.

FURNESS SC: Dr Cala, reading the circumstances of death, as mechanical asphyxia, not determined with certainty, in circumstances where you've got the clinical age range being expanded, you've got the similar deaths of siblings, that are not considered suspicious, and you've got mechanical asphyxia not determined with certainty, surely that would take you into the undetermined or unascertained range?

WITNESS CALA: Yes.

FURNESS SC: Professor Hilton?

WITNESS HILTON: That sentence causes me difficulty, I don't know exactly what the meaning he intends to convey, or the sentence, are they talking about overlaying or are they using the term mechanical asphyxia or suffocation as a mechanism of overlaying, I'm struggling with this, I really don't know quite what they're trying to get at here, if they're talking about mechanical asphyxia or suffocation, not determined with certainty I think that sentence speaks for itself, not determined, undetermined, I don't know I really want to go into overlaying because that takes us into different territory altogether.

FURNESS SC: Professor Cordner in terms of my question, or even observation, to the--

PROFESSOR CORDNER: Well I think it is an ambiguous cause or sentence but I think as I have read that, I've tended to read it as a unity, so the mechanical asphyxia and suffocation together.

FURNESS SC: Just coming back to the haemorrhages that you referred to around the eyelids as being a possible sign, Dr Cala could one find in a smothering case, similar haemorrhages elsewhere in the face or body which led one to consider suffocation?

WITNESS CALA: I don't know about the rest of the body but I'd be concerned about facial petechial haemorrhages, that is not diagnostic but it would make me concerned that some form of suffocation might have occurred.

FURNESS SC: Does anyone want to say anything more about the signs of suffocation. Professor Cordner?

PROFESSOR CORDNER: I'm sorry can you repeat the question.

FURNESS SC: I'm sorry I was looking the other way, it was a general opportunity if anyone wanted to say anything more in general terms as opposed to specific to the Folbigg children, about smothering and the signs that may or may not be left?

PROFESSOR CORDNER: Can't think of anything at the moment.

JUDICIAL OFFICER: Just before we leave that, Professor Hilton you mentioned smothering by use of a plastic bag?

WITNESS HILTON: Yep.

JUDICIAL OFFICER: And I understood you to be saying that that in particular would not leave any signs at all?

WITNESS HILTON: In my limited experience of people dying from putting their heads in plastic bags there are absolutely no signs of anything at all, except a dead person with a plastic bag on their head.

FURNESS SC: The fact being they had the plastic bag on their head when they were found?

WITNESS HILTON: Of course.

WITNESS CALA: Could I add something to that. Unfortunately I've seen quite a lot of these over the years, in an elderly population and sometimes the body arrives with the bag over the head and sometimes the bag has been removed by ambulance or police and it's true what Professor Hilton says, sometimes there are absolutely no signs and unless you were told about the plastic bag you would have no idea why they died, but on occasion you can see where it's been tied by a cord, you may see a very thin rather quite faint line across the, somewhere at the front of the neck that might even be indistinguishable from a skin crease, so it's very very hard to tell.

FURNESS SC: So is that--

WITNESS HILTON: Or gathered--

FURNESS SC: I'm sorry?

WITNESS HILTON: No I was just - I was saying that something attaching it will leave a mark, such as--

FURNESS SC: Yes, but it may not, there may be no mark?

WITNESS HILTON: --gaffa tape.

WITNESS CALA: That's right.

FURNESS SC: So is it the case, consistent with the evidence you've given

before Dr Cala, that there may have been a case where a child has been smothered and there are no signs on autopsy, which is when a forensic pathologist looks to the clinical matters and the circumstances consistent with the SIDS definitions?

WITNESS CALA: Yes.

FURNESS SC: Whichever definition you pick?

WITNESS CALA: Yes.

FURNESS SC: Now can I come to Caleb and what I propose to do is to indicate to you what I understand to be known, without controversy about Caleb, and I will give you each an opportunity to disagree with that or to add to it. I think firstly that Caleb was born on 1 February 1989 and he died on 20 February 1989 and he was 19 days old. In terms of the risk factors which we haven't gone through but from your reports there's general agreement and I think no controversy as to what the risk factors are for SIDS. He was full-term, he was not underweight, his mother did not smoke, he was found on his back with his face uncovered in his own bed and there were no signs of neglect and the family was not socioeconomically disadvantaged and his mother was 21 years old at the time of his birth and death and his father smoked but outside.

Professor Cordner, do you want to add to any of what we understand to be the risk and protective factors that are relevant to Caleb, other than what I've mentioned?

PROFESSOR CORDNER: Well we just need to be a little bit careful about talking about these factors, they are associated and there's a bit of a tendency to think of them as causative, so they may have causal connection but they may simply be associations so as long as everybody is clear about that.

FURNESS SC: Yes, well the evidence was clear yesterday Professor Cordner that they're not causative?

PROFESSOR CORDNER: Okay, so I'm not quite sure what, if they're not causative, what conclusion follows.

FURNESS SC: Would you accept the description of them as risk factors?

PROFESSOR CORDNER: Yes, I accept that.

FURNESS SC: I can refer you to your report where you set out a number of risk factors, would that assist?

PROFESSOR CORDNER: If you like.

FURNESS SC: Page 30?

PROFESSOR CORDNER: Yes.

FURNESS SC: You refer to the epidemiological factors associated with or correlated with SIDS and then you set out quite a number of them?

PROFESSOR CORDNER: Yes.

FURNESS SC: Many of which I've dealt with in terms of Caleb?

PROFESSOR CORDNER: Yes.

FURNESS SC: Do you see that?

PROFESSOR CORDNER: Thank you.

FURNESS SC: In the second last dot point, you refer to mothers of SIDS infants tend to be young, less than 20, now Professor Horne gave evidence yesterday from studies in the United Kingdom, which defines young, which as you know appears on the risk model, as under 26, do you think it's closer to under 20?

PROFESSOR CORDNER: Oh well I bow to people who are more expert than me in the clinical description I suppose of SIDS.

FURNESS SC: She's a researcher, but nevertheless it's based on research she'd spoken of, rather than clinical matters--

WITNESS HILTON: If I can just come in here very briefly and I'm sorry to over talk when the question was not directed towards me, but the reference of mothers being young, below 20, mothers being young under 26, really reflects modern tendency that young women by and large are less likely to be having children than women of 26 years or greater, therefore one would expect now if age had an awful lot to do with it we'd be seeing a lot more SIDS babies in mums who give birth at 26 or older, so I don't think it's got really very much to do with the aetiology of SIDS whatsoever.

FURNESS SC: Just one other matter while we're on your page 30 Professor, about halfway down you say, "A history of minor respiratory, gastrointestinal illness in the days leading up to death, this is no longer a consistent finding", so that's taken out of the epidemiological factors associated or correlated with SIDS I take it?

PROFESSOR CORDNER: Well I don't know that it's I mean I'm simply referring to other expertise when I'm listing that, I don't have any independent ability to be able to assert--

FURNESS SC: No, but you listed it on the basis that you clearly believed it to be true at the time, based on what you read?

WITNESS CORDNER: Yes, and it's no longer a consistent finding. But I think

minor illness still sticks in my mind as a prelude to many cases of SIDS.

FURNESS SC: Many cases of SIDS?

WITNESS CORDNER: Well, as a common prelude to many cases of SIDS, yeah.

FURNESS SC: What's that based on, Professor?

WITNESS CORDNER: Well, I said, "in my mind". I still think of a preceding minor viral illness as a feature of cases of SIDS.

FURNESS SC: When we discussed earlier today, before lunch, the SIDS categories, and I think classic SIDS in particular, there was excluded minor inflammatory viral matters - and at that stage my cold came into it, I remember - and your view was that those sort of virusy colds - that maybe you go to a doctor, perhaps you're hospitalised, but - of a minor nature, are excluded from SIDS?

WITNESS CORDNER: Well, we're talking about the cause of death.

FURNESS SC: Yes.

WITNESS CORDNER: So, I think we're talking at slight cross-purposes.

FURNESS SC: You clarify it for me.

WITNESS CORDNER: So, when we were discussing it before, we were talking about possible competing cause of death.

FURNESS SC: Right.

WITNESS CORDNER: So, there was a discussion about the degree of observed infection that you could see under the microscope that might be sufficient for some pathologists to say, "Well, that's the cause of death", even though all that was observed clinically in that child was a minor viral illness in the day or days prior to death. So, some pathologists, with that history, put bronchiolitis as the cause of death, other pathologists said SIDS. So, that was the discussion we had before. These are lists of factors, as you listed them--

FURNESS SC: Yes.

WITNESS CORDNER: --that might be part of the circumstances or prelude within which - or following which a sudden unexplained death in an infant occurred, and that might then be called SIDS. So, I'm not sure that I've clarified it for you.

FURNESS SC: No, I'm not sure that--

WITNESS CORDNER: You don't look as though--

FURNESS SC: I'm not sure that you have either. One conclusion one could draw, I suggest Professor, is that reasonable minds might differ?

WITNESS CORDNER: So?

FURNESS SC: Reasonable minds might differ as to one of your forensic pathologists who said SIDS and the other one who said bronchiolitis?

WITNESS CORDNER: Well, no, I think - I think we are at cross-purposes. This is a list of associations with SIDS.

FURNESS SC: Yes.

WITNESS CORDNER: The other was a discussion about a pathological diagnosis in a particular case where one can see signs of disease of a minor degree, which some pathologists would regard as the cause of death, particularly in previous times, and some pathologists would call SIDS. So, I - it's a different - we're talking about chalk and cheese, really.

FURNESS SC: Yes. There's just one aspect of that definition, is that, in terms of the SIDS autopsy - that is, we have the three categories, there's the clinical, the circumstances and the autopsy - under the heading "autopsy" is "minor respiratory system inflammatory infiltrates are acceptable". So, what you're referring to there is something seen post mortem under a microscope?

WITNESS CORDNER: That's right, yeah.

FURNESS SC: And in relation to the factors, or trends or associations with SIDS, "the history of a minor respiratory or gastrointestinal illness in the days leading up to death is no longer a consistent finding in respect of a factor that may have contributed to SIDS". Is that right?

WITNESS CORDNER: I think that's right, yes.

FURNESS SC: Thank you. Now, in terms of the matters I have read out in relation to what I have described as "risk factors", or can be considered epidemiological factors associated or correlated with SIDS as referred to by Professor Cordner, is there any other matter that should be included or does anyone want to take issue with what I have included?

WITNESS DUFLOU: A somewhat, I, I think controversial, potential risk factor is breastfeeding versus not breastfeeding.

FURNESS SC: Yes.

WITNESS DUFLOU: So, bottle feeding possibly is an independent risk factor, possibly is related to behaviour of parents in general. Yeah, and look, I, I don't isolate bottle feeding alone. It's - many of these risk factors are interrelated in some way.

FURNESS SC: Yes, and so you would add, quite properly, "bottle fed"?

WITNESS DUFLOU: Yes, I'd, I'd certainly consider that.

FURNESS SC: Thank you.

WITNESS DUFLOU: And then, in this specific case, there's the potential for a problem with the upper airway as well.

FURNESS SC: I'm coming to that.

WITNESS DUFLOU: Yes, yeah--

FURNESS SC: I'm talking about the risk factors, let's--

WITNESS DUFLOU: Yes, certainly.

FURNESS SC: We'll definitely come to the medical condition, if you like.

WITNESS CALA: The only thing I'd add is maternal smoking, but I, I think that's, that's been brought out earlier as, as a risk factor.

FURNESS SC: Yes, I included that his mother didn't smoke.

WITNESS CALA: I'm sorry, I didn't see that, yep.

FURNESS SC: No, that's all right. Professor Hilton?

WITNESS HILTON: Only to make a fairly trite observation, that these are - this is a list of risk factors and a child may die of SIDS with all these risk factors - risk factors, or it may die of SIDS with none of these risk factors.

FURNESS SC: That's right, they're risk factors. That's understood.

WITNESS HILTON: Okay.

FURNESS SC: Thank you, Professor. So, moving on then from the risk factors, there was evidence at the trial from a Dr Springthorpe, who was a consultant paediatrician, and he dealt with child development problems and the like. He gave evidence about having seen Caleb on two occasions, once when he was 14 hours old and then when he was about two weeks old. His evidence was that, when he first examined Caleb, he had developed a respiratory distress which required some oxygen through the night, and he described it as a stridor, a noisy breathing which he described as "a common occurrence in newborn children". A chest X-ray was done and clear and Caleb's condition improved over the next two days.

And then he saw him on a second occasion, where he gave evidence that he still had a mild respiratory stridor and, in his oral evidence - because he

provided a statement and gave oral evidence - he said that the stridor was "very, very mild", and he diagnosed laryngomalacia, or "floppy larynx". Now, does that accord with what each of you understand to be the evidence in relation to Caleb?

WITNESS CALA: Yes.

WITNESS DUFLOU: Yes.

FURNESS SC: Yes?

WITNESS CORDNER: Yes.

FURNESS SC: Now, continuing on, the trial had evidence from the ambulance officers by way of statements evidence or ambulance reports, and the ambulance report described Caleb as "Pale, warm to touch but not breathing", and his skin temperature was described as "Normal", and his posture was recorded as "Supine". So, that's one ambulance report.

But there was a second ambulance crew, and they are the second ambulance crew because they turned up after the first ambulance crew. Mr Reed, who was an ambulance officer, recorded the skin temperature as "Cold to touch". He also recorded the airway as "Clear", whereas the first ambulance officers recorded the airway as "Obstructed", which may indicate there was some time period between the two. So, that's the ambulance reports.

In addition to the ambulance reports, and according to Professor Berry's reports - which you've all had access to - he reports, from material available to him, that Ms Folbigg said that Caleb was "cold" when she found him - and she was the first. And then Craig said that Caleb was "warm" when he found him seconds later. So, that is the evidence in respect of the circumstances, temperature wise, with Caleb. Does anyone want to take issue with any of that?

WITNESS HILTON: Except that - no, I'm not taking issue with it but they - these are all subjective findings--

FURNESS SC: They are.

WITNESS HILTON: --by four different people--

FURNESS SC: That's right.

WITNESS HILTON: --at four different points in time and, quite frankly, I have grave doubts as to which, if any, of these observations have got any relevance to - as to when the child died.

FURNESS SC: Well, that's a separate matter, which we'll get to, Professor.

WITNESS HILTON: Mm.

FURNESS SC: For the moment, I'm indicating to you where the state of the evidence was and giving you an opportunity to disagree, if you do. Or, if you wish me to take you to the specific evidence, I'm happy to do so. I understand what you're saying, Professor, and we'll come to that--

WITNESS HILTON: Right, thank you.

FURNESS SC: --as to the relevance to the time of death. Did you have anything you wanted to say, Professor Cordner?

WITNESS CORDNER: No.

FURNESS SC: Well, then the next event was the report of death to the coroner and, in that report, it described that, "At about 2.53, Kathleen awoke and checked him and found him to be cold". So, that was a source of information for that. And she also found, it is said in this report, "a small amount of blood and froth around his mouth". So, that was the first reference to the blood and froth around Caleb's mouth and there was no evidence of a death scene examination. Then a death certificate was issued, which recorded "Sudden infant death syndrome".

Now, having said all of that, can I take you to the autopsy report, which I think is at tab 6. Tab 6 and there's tab 10 as well. So, let's start with tab 6. It's on the screen. So, what we can see from tab 6 is the autopsy began at 11.45 in the forenoon and the autopsy was carried out by Dr Cummings, at the morgue in Newcastle. Now, Dr Cummings - you might know this, Dr Cala, or maybe you, Professor Hilton - Dr Cummings was not a forensic pathologist, is that right?

WITNESS DUFLOU: Correct.

FURNESS SC: He was a medical practitioner who, from time to time did this work.

WITNESS CALA: I, I didn't know that.

WITNESS HILTON: No, that's - as, as I--

FURNESS SC: No? New to all of you?

WITNESS DUFLOU: No. My, my understanding - and I've met Dr Cummings previously - my understanding is he was a pathologist. A, a fully qualified pathologist, but not practising as a full-time forensic pathologist.

FURNESS SC: Thank you. Do you have any--

WITNESS CORDNER: That was my understanding as well.

FURNESS SC: Thank you. Now then, the external examination is set out, "A

well-nourished and normally developed male child". Noted that rigor mortis was "present" and "post mortem staining" was seen over the back - this is at 11.45 - and there were "No external signs of injury" and "Infant appeared to have been well-cared for". All of which is quite ordinary and doesn't require any comment, is that right?

SPEAKER: Yes.

SPEAKER: Yeah.

FURNESS SC: It's irrelevant that there were "No external signs of injury". I'm not suggesting it's not relevant, but it speaks for itself, unless anyone wants to say something about the external examination? No?

The respiratory system - the larynx, trachea and bronchi were "unremarkable". The lungs were "somewhat mottled on their pleural surfaces" and "cut surfaces" were "somewhat moist, but otherwise unremarkable". Now, Dr Cala, I'm going to ask you about this, because you carried out the microscopic examination of the tissues, although I'm sure you don't remember that. What does that mean, that description of the lungs?

WITNESS CALA: Mottled just is a description of the colour and he may be referring to the variegation in colour on the external surface of both lungs, possibly referring to areas of pinkness without him describing it in comparison to areas of relative blueness or cyanosis. But somewhat, means to me with that adjective that it's maybe less than - it's a small amount but I, I don't, I don't know any more than that. And then cuts - do you want me to continue?

FURNESS SC: Yes.

WITNESS CALA: Cut surfaces, in other words when the lungs were cut in two and, and splayed open and looked at with the naked eye, he said that they were somewhat moist but otherwise unremarkable. Moist to me doesn't have a great deal of meaning. Moist means what it does in the ordinary terminology and I think that means that blood has escaped through cut blood vessels and that it's exuded onto the surface but there doesn't seem to be any other findings that he's referred to at all such as consolidation by pneumonia.

FURNESS SC: I'll come back to the others with that. Can we just have tab 10 on the screen for the moment? This was the microscopic examination and if you scroll down, continue to scroll down see Dr Cala you're named down there?

WITNESS CALA: Yes.

FURNESS SC: And under lungs, congestive changes are present with focal areas of haemorrhage present within some - can you pronounce that word?

WITNESS CALA: Alveolar.

FURNESS SC: Alveolar spaces. What does that mean?

WITNESS CALA: In short, not a lot. It's a very common finding. Congestion refers to an increased amount of blood in blood vessels. We see that all the time in deceased people. Focal, in other words, patchy areas of haemorrhage or bleeding present within some alveolar spaces. So, in other words I, when I look at the lungs the blood vessels contained a large quantity of blood and there were areas of red cell spillage if you like, into the alveolar spaces, the air sacs of the lungs. And that's all I found.

FURNESS SC: Do you draw any conclusions from your examination or the autopsy report as to that telling us anything about Caleb's cause of death?

WITNESS CALA: That description is quite a non-specific finding. I wouldn't, just based on that description of the lungs I wouldn't be able to say what the cause of death was.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Yeah, in my view from those descriptions provided so far, there's effectively no pathology there that's identified.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Well, there is pathology there but you've got focal layers of haemorrhage present within some alveolar spaces but--

FURNESS SC: I'm sorry Professor, you might have to get a bit closer to the microphone. I missed all of that.

WITNESS HILTON: Sorry, with great respect to my colleague there, there is pathology there with the focal layers of haemorrhage present within some alveolar spaces. The question is what does it mean? Answer, I really don't know and I am in entire agreement with Dr Cala that it's non-specific. It's seen in many people who have died suddenly, unexpectedly from a variety of causes.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: Just a couple of things to say and I don't want to load them up with great significance but it's interesting that Dr Cummings refers to the small amount of eosinophilic exudate in the alveoli, so in other words a bit of pulmonary oedema and Dr Cala's a very experienced pathologist--

FURNESS SC: Sorry, where does he refer to that?

WITNESS CORDNER: --hasn't mentioned that in his description.

FURNESS SC: Sorry, are you referring to the histology?

WITNESS CORDNER: I'm referring to Dr Cummings' autopsy report.

FURNESS SC: Yes, under the heading "Histology".

WITNESS CORDNER: Under the histology yeah.

FURNESS SC: Yes, that's right. On the first page but we can come to the second page.

WITNESS CORDNER: Okay, well I'm sorry, I thought you were talking about the histology.

FURNESS SC: That's all right. Well, perhaps if we can come now to the second page of tab 6. And this is the rest of it. I was just dealing with that part of it first. So, you have in the alimentary system up the top, "The stomach contained a large quantity of curdled milk." Does that tell you anything Dr Cala?

WITNESS CALA: It's not measured in volume. We don't know how much that is. But that suggests to me that that child had a recent feed of milk but I don't know when that was. That's all I can say about that.

FURNESS SC: And recent could be what sort of span?

WITNESS CALA: Within, well this is a little baby. They feed on demand. Within several hours.

FURNESS SC: Does anyone else want to say something about the large quantity of curdled milk, Professor Hilton?

WITNESS HILTON: No, just as I say, Dr Cala said, it indicates that the child's had a feed relatively close to the time of death.

FURNESS SC: Relatively close to the time of death?

WITNESS HILTON: Relatively close to the time of death.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Providing opinions based on stomach content is dangerous for forensic pathologists. There are probably graveyards full of forensic pathologists who have done that, to their disappointment. It's, but in general this is an indication to me that Caleb died not long after he was fed. I'm being vague on purpose. In experimental work, it's been shown that in general stomachs in very young infants empty within an hour or two. I think I referenced that in my report.

FURNESS SC: Sorry, when you say experimental, what do you mean?

WITNESS DUFLOU: Essentially, feeding, well there's a study which I refer to

where infants are fed and the stomach contents is quantified by obviously not by autopsy but, but, but by various other forms of investigation whereby you can determine how much remains in the stomach over a period of time. So, it would tend to show that death occurred probably not more than an hour or two after being fed and may very well have occurred very shortly after being fed.

FURNESS SC: Do you want to say anything Professor Cordner?

WITNESS CORDNER: I agree with the first sentence of what Professor Duflou said; this is tiger country for forensic pathology. And, so, and then one gets tempted by you know, to, so I think I'm happy just to leave the discussion where it's been.

FURNESS SC: If we turn now to the histology which is further down that page. And it again refers to the lungs being congested and in places show incomplete aeration. I think you were referring to that second sentence Professor Cordner?

WITNESS CORDNER: Yes.

FURNESS SC: Can you tell us what that means?

WITNESS CORDNER: Well, it only, in addition to what Dr Cala has already said that Dr Cummings is describing some areas where there's a bit of collapse of alveolar. In other words, somehow there's less air in them. They're not expanded. And he's also describing that other alveoli or perhaps some of them too contain eosinophilic, which is pinkish fluid which is the usual common phase for, for oedema or a little bit of, and he says a small amount of fluid on the lung so to speak.

FURNESS SC: Does that tell you anything about the health or otherwise of Caleb when he died?

WITNESS CORDNER: No, it doesn't but it does, it is connected in my mind to a discussion which I'm sure we're going to have about what was seen at his mouth.

FURNESS SC: The blood and froth?

WITNESS CORDNER: Yes.

FURNESS SC: That's what that's relevant to?

WITNESS CORDNER: Well, in my mind.

FURNESS SC: Do any of you want to say anything about the exudate? Dr Cala?

WITNESS CALA: It's described as a small amount. I may have missed it. I don't remember the slides appearance but I don't, I wouldn't draw, even if I had

seen it I wouldn't draw firm conclusions about its presence.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Look, I'd agree with Dr Cala there.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Yeah, I think Dr Cala's report, Dr Cummings' report is quite congruent with perhaps minor difference in choice of words.

FURNESS SC: I'm sorry, I missed that.

WITNESS HILTON: The two reports on the histology of the lung are congruent with perhaps minor difference in choice of words.

FURNESS SC: Having seen what the autopsy said and Dr Cala's microscopic examination of tissues, are there any features or signs of smothering evident on those documents? Professor Hilton?

WITNESS HILTON: No.

FURNESS SC: Dr Cala?

WITNESS CALA: The only sign of concern is the presence of what's described as blood and froth around the mouth.

FURNESS SC: Is that relevant to smothering?

WITNESS CALA: Yes.

FURNESS SC: Well, I'll come to that first then. I'll come back to you, Professor Duflou about that. Blood and froth, what does that tell you Dr Cala?

WITNESS CALA: It tells me that somebody observed the presence of blood and froth whatever that was, I assume that's bubbly type fluid around the mouth. I don't know exactly what the cause of it is. But, when you look at Dr Cummings' autopsy, and go to the respiratory system and the gastrointestinal system he hasn't described any, other than microscopic blood in the alveolar spaces, he hasn't described any blood or any oedema fluid in the lower airways or in the trachea or anywhere in the mouth in fact.

Which, if it was present and it's visible with the naked eye, both blood and pulmonary oedema fluid, I would have expected he would have described that. So, the question is where did that blood and froth come from? Could it have been caused by pulmonary oedema? I don't think so because I would have expected that he would have seen it lower down in the airways and would have come up from there, so I'm not saying I categorically exclude that but he didn't find any evidence of that, so could it be from external pressure on the nose and mouth? That's possible, although there were no findings of injuries around

the mouth or the nose, none that I've seen.

No petechial haemorrhages on, on the face. So, it's of concern to me that at the end of the autopsy and all the testing done there is this description but I'm not satisfied of the cause of that and I don't know how much it is, either in volume. It, it would seem to be of a small amount but nevertheless it's described as being present and I'm not satisfied that I've read or seen anything that provides me with an explanation for that at this stage.

FURNESS SC: Perhaps we'll have the report of death to the coroner which is tab 3 up on the screen. You'd be very familiar with that document?

WITNESS CALA: Yes.

FURNESS SC: Generally, as well as specifically.

WITNESS CALA: Yes.

FURNESS SC: If you can scroll down a bit further you'll see there the description. The description that I've given you and that you've referred to comes from this document.

WITNESS CALA: Yes.

FURNESS SC: So about 2.53am the mother awoke and checked the child and found him to be cold and apparently dead, she found a small amount of blood and froth around the child's mouth, so that's all that's known?

WITNESS CALA: That's right.

FURNESS SC: So when you say an amount, all that's known is small and as you say we don't know what small means. So the effect of that blood and froth, to you Dr Cala, is that it raises the possibility of what, or it doesn't exclude the possibility of what?

WITNESS CALA: Doesn't exclude the possibility of some external agent having been applied, either accidentally or deliberately to this child's outer airway, I don't think it can be explained by the position of the child being face up, as opposed to being face down with its face in the pillow, there's no description of blood on the pillow, only around the child's mouth. I don't think it could be explained, if the child was dead at that stage, by the effects of decomposition, which can sometimes occur rapidly but which can leave a pathologist to see what's called purge fluid coming out of the mouth and sometimes the nose clearly Caleb was alive at 1am when he was fed and at 2.53, so not even two hours later he's apparently deceased, decomposition I would say is not a factor here, so I don't know exactly the cause, I'm raising these as possibilities but I've discounted a number of things.

FURNESS SC: Would that leave you to classify the death as undetermined rather than SIDS?

WITNESS CALA: Yes that and the age of the child at 19 days is not even three weeks old, I would be very cautious about calling this anything other than undetermined.

FURNESS SC: The 19 days is relevant to the classic SIDS 1A but in fact SIDS 2 permits the child to be less than 21 days?

WITNESS CALA: Yes.

FURNESS SC: Does that change your view?

WITNESS CALA: Possibly, if a small amount of blood is allowable in that subcategorisation possibly, because everything else about this child was otherwise normal, it's possible and it could be--

FURNESS SC: Do you want to look at the classification to see whether or not it permits it?

WITNESS CALA: Yes.

FURNESS SC: Can we have the definitions back up. So if we go down to two, autopsy, abnormal growth and development not thought to have contributed, marked inflammatory changes or abnormalities not sufficient to be unequivocal, does that help you?

WITNESS CALA: No, so there's no, even for 19 days there's no abnormal growth or development in this child that I've seen and I'm not aware of marked inflammatory changes or other abnormalities.

FURNESS SC: So where does that leave you?

WITNESS CALA: I'm just reading the clinical if you don't mind. Well the clinical, the age range is 19 days so it fits with category 2.

FURNESS SC: It does.

WITNESS CALA: However I wouldn't be happy to call this category 2 SIDS because of the presence of the blood and the froth, I'm not satisfied that I would unequivocally call this category 2 SIDS, based on that.

FURNESS SC: Do you have a view Professor Duflou about the blood and froth and what it might mean?

WITNESS DUFLOU: It's in my experience, something that isn't uncommonly seen in cases of SIDS, shall we say in cases that I'll end up calling SIDS, it's always a matter of having a look at where this could possibly come from, so having a look inside the mouth, inside the nose, the airway, the lungs, sometimes you find a site of origin, sometimes you don't.

FURNESS SC: And you don't in this case, is that right?

WITNESS DUFLOU: Like in this case, you might look, there's a small amount of blood on a nostril, the frothy bloody material and you just don't find a cause for it, in the absence of anything else, my view is it doesn't negate as an entirely reasonable cause of death, sudden infant death syndrome. In this case specifically because the infant is 19 days old it would fall under category 2, accepting that when Caleb died there wasn't the subcategorisation, but yes I would classify it as SIDS category 2 on that basis and indicate that that is the reason why I have given it as category 2.

FURNESS SC: Because of the 19 days old?

WITNESS DUFLOU: Because of the 19 days, no other reason.

FURNESS SC: Do you have a view Professor Hilton?

WITNESS HILTON: Yep. The presence of frothy bloody fluid at the nose and sometimes the mouth of babies whose death is ascribed to SIDS is commonplace.

FURNESS SC: Professor Cordner?

PROFESSOR CORDNER: I think there's just a little prior thing that needs to be clarified, the description is blood and froth, I think we all learned to be very careful about literally accepting everything that is written down in police reports so it could be that there was blood and there was froth, but to my way of thinking that could also be blood stained froth or bloody froth or froth tinged with blood I think and that may alter the understanding of what this is. Now there has been I think description and actually the endpoint is probably not any different but I think it worth just making that point, I do not think that blood and froth or blood stained froth is particularly exceptional in a case that ends up being categorised as a form of SIDS.

FURNESS SC: And you'd call it SIDS 2 because of the age of Caleb?

PROFESSOR CORDNER: Well yes, the weakness in categorising this death as SIDS 2 probably relates more to the examination of the scene.

FURNESS SC: So there was no real death scene examination?

PROFESSOR CORDNER: Well--

FURNESS SC: That we know of?

PROFESSOR CORDNER: Yes, I think there's a discussion to be had as to whether that does take it out of 2 but--

FURNESS SC: Well let's have that discussion Professor Cordner, what do you think?

PROFESSOR CORDNER: Well if you look at category 1B, that category includes investigation of the scenes where incidents leading to death was not performed, so investigation of the scene not performed is included in 1B. Category 2 sounds like a category which is much weaker than category 1 but that specific exclusion has not been included in 2, so it would be a bit odd that there wouldn't be a category for what we're talking about with Caleb, so I think you know I've glided a bit over that to categorise this death as category 2 in my own mind and because of the age that it is vulnerable to that criticism.

FURNESS SC: Professor Byard was of the view that there was no examination of the brain, and that in conjunction with the inadequate death scene investigation put him in the undetermined category, this was in 2003 obviously, would you agree with that?

PROFESSOR CORDNER: Well he's the originator of this but yes and I was aware that there was, well it wasn't that there was no examination of the brain, there was no histology I think of the brain, so the brain was examined to an extent, but not histologically and I would think the histological yield in sudden infant - sudden unexpected death in infancy, would have to be pretty slim, in other words the chances of finding something significant in a brain that was normal to the naked eye, and everything else we know about here, the chances of finding something under the microscope in the brain would be relatively, you know, quite small, so Professor Byard, it would be interesting to know whether he is proceeding from sort of a more principled approach, but from practical, from a practical point of view it probably isn't a huge omission but it's hard for somebody to say that the person who is involved in creating this classification rules it out on the grounds that he did, so - but I'd call it a 2.

FURNESS SC: He called it undetermined prior to 2004, so he called it at a time when--

PROFESSOR CORDNER: Oh okay, sorry, so do we know--

FURNESS SC: --SIDS 2 wasn't available?

PROFESSOR CORDNER: --what he thinks post 2004.

FURNESS SC: I don't know what he thinks post 2004. You said before that category 2 SIDS can be described as a weaker--

PROFESSOR CORDNER: I'm sorry I was perceiving in my answer on the misapprehension that he had said it was not category 2 after--

FURNESS SC: No, this was his evidence at the trial, so all the evidence before the Judge and the jury and otherwise available is pre-2004, so--

PROFESSOR CORDNER: Well just so you understand my previous response was I misunderstood.

FURNESS SC: You described category 2 SIDS as weaker than category 1A and presumably 1B which leave a bit more room I suggest to move towards undetermined, if it's weaker, is that your view or not?

PROFESSOR CORDNER: No I'd rather it the other way, category 2 is weaker and therefore is a bit more flexible about inclusion.

FURNESS SC: Can I just turn to Professor Berry's evidence for the moment. Dr Cala he gave evidence and as I said all of this is pre-2004, he gave evidence that blood stained froth, which is the way he interpreted the report, around the nose and mouth is a common finding in sudden infant deaths and in accidental or deliberate suffocation, do you have anything to say about his view, he said that in his report?

WITNESS CALA: I'm just listening to your question.

FURNESS SC: Want me to repeat it?

WITNESS CALA: No, no it's my experience that sudden infant deaths who don't bed share, the finding of blood and froth around the mouth is quite uncommon but the rest I agree with.

FURNESS SC: Thank you. Now, another observation that Professor Berry made, was that he would exclude SIDS because of the presence of haemosiderin in Caleb's lungs. Now, on documents, that is the autopsy and the other document you completed, Dr Cala, did you see evidence of that?

WITNESS CALA: No, I don't recall.

FURNESS SC: He, I think, was relying upon the - perhaps the blood in the spaces that you've described and he's referred to on the autopsy. Perhaps if we could have the autopsy back up again. Perhaps the next page. The histology. Extra--

WITNESS CALA: Travasated.

FURNESS SC: Extravasated, thank you, red blood cells.

WITNESS CALA: Extravasated just means they've come out into the tissue.

FURNESS SC: Can you see on that description the presence of haemosiderin?

WITNESS CALA: No.

FURNESS SC: Can anybody?

WITNESS CORDNER: No, there's nothing there but that requires a special - generally speaking that conclusion would be made after doing a further special stain of the lungs to demonstrate the haemosiderin.

WITNESS HILTON: I'm sorry to keep interrupting you but--

FURNESS SC: No, no. You're not interrupting, Professor Hilton. Go on.

WITNESS HILTON: You're suggesting or you're saying that Jim Berry said there was haemosiderin in the lungs?

FURNESS SC: No, that's what his report says. We can check his report if you like.

WITNESS HILTON: This then leads onto another question. Was Jim Berry supplied with unstained sections of lung to apply the special stain that Professor Cordner has just referred, which will show him the haemosiderin because you're not going to see haemosiderin readily on a normal H&E stain.

FURNESS SC: Well, his report, if we could have his report up. Page 21. Sections of lung stained by Perls' method for ferric iron, showed dark blue pleural and--

WITNESS HILTON: Interstitial.

FURNESS SC: Thank you. Does that help? There we go. He talks about with some haemosiderin granules.

WITNESS HILTON: Mm.

FURNESS SC: He saw the 14 stained microscope slides of the tissues.

WITNESS HILTON: That's the appropriate stain to apply to show haemosiderin but that's the first mention of that stain in all of Caleb's autopsy report and of Dr Cala's report on his examination of the same slides that Dr Cummings - there's a problem here that knowing - was Jim Berry in actual fact examining the appropriate slides. The same slides they were - and if so, how did he happen to get the Perl stain when Roy Cummings didn't and Dr Cala didn't?

FURNESS SC: All we have is the first paragraph of his report.

WITNESS HILTON: Yeah sure and I'm pointing, to my mind, a potential discrepancy. It's an important discrepancy in his report from what other people have reported.

FURNESS SC: Is there any possibility of having access to those slides? I'd be very surprised but--

WITNESS HILTON: Jim Berry's slides?

FURNESS SC: --I'm sure we can make enquiries.

WITNESS HILTON: No, if they were returned, for example?

FURNESS SC: The health can make enquiries on our behalf. I'd be surprised. At least we know the source of Professor Berry's observation so can we come back to that?

WITNESS HILTON: Yes.

FURNESS SC: Before we leave Caleb, there's been some recent reports received, some of them extremely recent, from Professor Blackwell and from Professor Clancy that deal with Caleb. Do you know what I'm talking about?

WITNESS DUFLOU: Yes.

FURNESS SC: They haven't been tendered but perhaps we can look at those reports and see what they say. Dealing with the Professor Blackwell report. This is the first report. We'll look at a second report. This is her second report and it's dated, apparently undated. I'm sure there's a date somewhere.

JUDICIAL OFFICER: 12 March, is it?

FURNESS SC: This is 12 March. The 13 March is a third report. If we go to the second report. Can we have that up on the screen? Page 6 with the heading "Caleb". She records what she describes as an,

> "Abnormal finding with histology of the lungs and repeats what has been said and she describes a personal communication with Professor Morris to the effect that these are proteins that pick up the eosin stain and a common finding in most post-mortem lungs and often seen in samples of children diagnosed with SUDI."

Just taking that sentence first. Is anyone in a position to comment upon that? Starting with you Professor Cordner.

WITNESS CORDNER: Your question is?

FURNESS SC: Are you in a position to comment on the second sentence of the first paragraph under the heading "Caleb"?

WITNESS CORDNER: The second sentence of the first paragraph?

FURNESS SC: Under the heading "Caleb". It's on the screen.

WITNESS CORDNER: That's simply a description of the word eosinophilic which means it likes eosin which is pink and so simply describing the mechanism by which the eosin is picked up by the fluid in the lungs and--

FURNESS SC: But importantly she describes it as--

WITNESS CORDNER: --often seen in - I agree with that.

FURNESS SC: The common finding?

WITNESS CORDNER: Yes.

FURNESS SC: Does anyone disagree with the common finding? No, Professor Duflou. No, no and then over the page or beginning on that page at the bottom. "This is important as a variety of infectious agents identified in SIDS SUDI can elicit inflammatory responses." Is anyone in a position to form a view as to her comment that "variety of infectious agents identified in SIDS SUDI can elicit inflammatory responses." Professor Cordner?

WITNESS CORDNER: There's a bit of a gap between this type of work of a research kind of practise at the coal face so people are often surprised that, unlike the law, in medicine we don't have a totally systematic ability to transfer research into practise.

FURNESS SC: You're being overly generous to the law, professor.

WITNESS CORDNER: Well, I was thinking that once there's a decision that's got weight, then everybody follows it so there is a sort of an ill-defined process between the time that people make research findings and some sort of way of working out whether they're useful, applicable, whether they're correct, before they're then picked up by somebody who says, "This is good." Somebody else picks it up and it may be presented at a meeting and somebody else thinks, "I might have a look at that." An institution might pick it up and say, "Actually we have to do this institutionally as part of a systemic approach to equality." But that's relatively unusual.

FURNESS SC: And as far as you're aware--

WITNESS CORDNER: I can't really comment on this because there's a lot of research out there that may well or may not bear on these issues so--

FURNESS SC: At best it's a possibility?

WITNESS CORDNER: Sorry?

FURNESS SC: At best it's a possibility?

WITNESS CORDNER: I'm not in a position to say that's meaningless or--

FURNESS SC: You just don't know?

WITNESS CORDNER: I don't know.

FURNESS SC: Professor Hilton?

WITNESS HILTON: Can I just remind myself. You original question was?

FURNESS SC: If you look at Professor Blackwell's report.

WITNESS HILTON: Yeah, the first line.

FURNESS SC: On the screen.

WITNESS HILTON: "Infectious agents identified in SIDS/SUDI can elicit inflammatory responses." That was your question?

FURNESS SC: Yes. Well, I'm asking you whether you wish to express an opinion on her opinion?

WITNESS HILTON: Germs are irritants that can elicit inflammatory responses, point 1. Point 2, are on occasion bugs detected in the lungs of post-mortem specimens taken from dead babies, yes, there are questions. Where do these come from? Is this real? Is this a contaminant? Answer, very often we cannot tell. I am very well aware of Caroline Blackwell's research interests and in fact somewhere in the distant past there's a paper published with two names on it. Well, four names on it actually. Two of which are Blackwell and Hilton so I've collaborated with Caroline in some of her research. Caroline is very interested in the possibility of, one might almost say, sub-clinical infections having a role to play - postulating that they have a role to play in sudden infant death syndrome.

FURNESS SC: It's nothing more than a theory. Is that what you're saying?

WITNESS HILTON: I don't want to denigrate theories because the world is full of theories, some of which work.

FURNESS SC: I wasn't meaning to denigrate it. I was meaning to try and classify what you were saying.

WITNESS HILTON: Yeah.

FURNESS SC: How would you describe it?

WITNESS HILTON: No, I think your description is right. It's a very interesting theory relating to factors which may be involved in the death of the child.

FURNESS SC: May be?

WITNESS HILTON: May be.

FURNESS SC: And it's at the research stage?

WITNESS HILTON: This is at the research stage and she - I might add she's continuing to publish from - she has continued to publish from time to time on this very topic. As have Paul Goldwater and I think Robert Clancy has contributed something meaningful to that sort of - that line of research but they are all well-meaning, honestly held theories. This may well be a - this may well

play a role in SIDS.

FURNESS SC: But we don't know one way or the other?

WITNESS HILTON: No, we don't.

FURNESS SC: Dr Cala?

WITNESS CALA: I basically agree with what Professor Cordner and Hilton have said about the theories and the disconnect between research and practise. I don't think I need to labour the point.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: Look I think I agree with all three. I think it's fair to say that in general, forensic pathologists view organisms in lungs, bacteria, viruses and other organisms as clinically relevant if there's discernible inflammation. So if you can see that there's inflammation under the microscope, typically in the form of a number of different types of inflammatory cells, but especially neutrophils, then you can say that the bacteria, usually cultured under appropriate circumstances, can be the cause of that inflammation. Finding only limited oedema and nothing else, I personally would not go so far as to say it's likely the result of bacteria or other organisms. Should bacterial culture and viral culture arguably have been done in this case? If it was done today, yes. But this was done in the late 80s. There was no standardised SIDS investigation in New South Wales in the late 80s.

And even into the early 90s, just going back on an aspect, microscopy of the brain in suspected SIDS cases, even where the brain was retained for neuropathologist investigation, was not necessarily done. So you know, we, we're very much looking at a different approach in those days, in a much more detailed and hopefully more scientific approach today.

FURNESS SC: Do you agree with Dr Cala and Professor Hilton that we're talking about theories?

WITNESS DUFLOU: Look, I, I would agree that it's a theory. In the end would it change my view as to whether it was SIDS or not? Probably not.

FURNESS SC: Professor Clancy, who you referred to, Professor Hilton, has also commented on this and - so if I could just read you what he says and if you need to, I can put it on the screen, "There is in SIDS and near-miss SIDS an exaggerated secretion of immunoglobulins, proteins intermucosal"--

WITNESS CALA: Mucosal.

FURNESS SC: Thank you, "secretions. Thus this finding of" and I don't know that, how do you pronounce that?

WITNESS HILTON: Eosinophilic.

FURNESS SC: Thank you, "exudate heightens diagnostic confidence of SIDS". Any comments?

WITNESS HILTON: Me?

FURNESS SC: Yes, Professor Hilton.

WITNESS HILTON: Once again, this is an expression of a theoretical concept which Robert Clancy, in his particular field, has thought about and is - has promulgated and I don't think he or I or anyone else can take it any further than that.

FURNESS SC: Thank you. Dr Cala?

WITNESS CALA: I don't think there's been broad acceptance by the forensic medical community about that theory.

FURNESS SC: Professor Duflou?

WITNESS DUFLOU: I would agree with both those comments.

FURNESS SC: Professor Cordner?

WITNESS CORDNER: I'm just reading it again, if you don't mind?

FURNESS SC: By all means. Do you want it on the screen? This is Professor Clancy's report. It's page 2, paragraph 16.

WITNESS CORDNER: Most of us, when we are thinking of pulmonary oedema, we have in our mind a certain degree of eosinophilia and if that was more marked, which of course we have no idea in this case whether it was, but if it was more marked, that is something that might be remarked upon in the histological examination. And if it was remarked upon, then the question would arise, why is it there? And that may be an explanation, but we don't know whether Dr Cummings was meaning the ordinary level of eosinophilia that we see with oedema and/or whether he was meaning something more and the slides today, unless there's any left in the block probably won't help because of the passage of time will have diluted the whole appearance, which may actually be an explanation for - one possible explanation for Dr Cala not seeing oedema today when Dr Cummings did 30 years ago, that the passage of time has obliterated the eosinophilic nature of the fluid, which might have made it virtually invisible.

FURNESS SC: Do you accept that I think Dr Cala said and Professor Duflou agreed with, that the body of forensic pathologists today would not - and I don't want to put words in your mouth, Dr Cala, would not accept--

WITNESS CALA: I think I said there is no broad forensic medical agreement.

FURNESS SC: Thank you. Do you agree with that?

WITNESS CORDNER: Agreement about?

FURNESS SC: About whether or not the inflammatory markers that are referred to by Professor Blackwell and Professor Clancy apply?

WITNESS CORDNER: No, I think that's probably - it's - that would be true for me, anyway, yeah.

FURNESS SC: Professor Duflou, when you opined in your report about why SIDS 2, was your classification, you included the stridor that Caleb had, his age, but you also referred to the death of his siblings, notwithstanding that they came later. How did you do that?

WITNESS DUFLOU: Yes, yes, well that of course is based on hindsight.

FURNESS SC: It is.

WITNESS DUFLOU: Whether that's of course appropriate in relation to looking at that case at the time, I'm not certain at all. But looking at the case in no particular order, there certainly is a sibling who has died of SIDS and in a situation like that, I, I think it's fair to include it as category 2 SIDS on that basis as well.

FURNESS SC: So just explain how you're taking the fact of the other siblings into account to bring it into SIDS 2? I don't understand what weight you're giving to it?

WITNESS DUFLOU: Well, I'm considering the requirements of SIDS category 2 and SIDS category 2 has, amongst other things an age possibility outside of the tightly defined age range. It also mentions where another infant has died in the same family or in the care of the same person. So for both those reasons it would go into category 2 and again, in this hypothetical autopsy report that I'd be writing, I would list the reasons.

FURNESS SC: You don't think you're getting away from SIDS when you've got an age issue, just in terms of the classic. You've got no death scene investigation, let's just put in Professor Byard's concern about the histology of the brain for the moment, you've got his floppy larynx and you've got the other children's deaths--

WITNESS DUFLOU: Okay.

FURNESS SC: --aren't you moving towards undetermined?

WITNESS DUFLOU: Well, we've got 19 days as opposed to a lower limit of 21. You know, I don't think there's anything magical about three weeks that necessarily exists at 19 days. You know, it's - it's not, for example, two or three days, it's, it's pretty close, all things considered, but at the same time, if

we're using definitional approaches to medicine, it falls in the definition of two as an absolute minimum.

FURNESS SC: I understand.

WITNESS DUFLOU: Now in terms of the other aspects, the definition certainly allows one or more. Now, I, I agree that at some stage you have to probably say enough. The problem is where.

FURNESS SC: Do you say it in Caleb?

WITNESS DUFLOU: Look - well, firstly, in terms of doing this case as the first case, I would put it in category 2 on the basis of the age, possibly considering the upper airway condition. After saying that, whether it was present or not I'm not sure. In terms of the scene examination, well, you know, effectively one was done by at least the local police, which is better than nothing at all. Again, it's a standard that wasn't in operation at the time and a cause of death of SIDS would, in my view, be entirely reasonable under those circumstances.

FURNESS SC: Looking at the case now, knowing about the three other children, would you still put it in SIDS 2?

WITNESS DUFLOU: Well, it becomes a matter, I think, of how much you consider the other cases or do you look at each case on its own merits? If you look at the other cases, Laura has not died of SIDS and is well outside the age range. She has, as a minimum, a medical condition which can reasonably explain death. So I think she could reasonably be excluded from the discussion. In terms of Patrick, that is not in the category of a sudden unexpected death in infancy, in my view. It's a different type of case again. So, so we've got two infants here, there's Sarah and Caleb. And in a situation where you have two infants dying suddenly and unexpectedly, I would certainly have no difficulty with giving SIDS as the cause of death of both those infants, under appropriate circumstances.

FURNESS SC: Thank you. Just finally in relation to Caleb, Professor Duflou, you made some observations about time of death in your report and I've taken you to the contents of the stomach and you were of the view that, you know, it's a dangerous place to go, but you did actually go there in your report.

WITNESS DUFLOU: I did.

FURNESS SC: And I'm just giving you the opportunity to either stay there or move away from it.

WITNESS DUFLOU: Fair enough. And, and I do mention in my report, and this is about halfway down that paragraph which on page 29, "The time taken for the stomach to empty in infants is variable and a complex topic of investigation with variations dependent on multiple factors", then I say, "but in general, gastric emptying time of one to two hours is not unreasonable". I stick by that view.

FURNESS SC: Keep going?

WITNESS DUFLOU: "When taken together with the body temperature descriptions, it appears to me very likely that Caleb died some short time after he was checked by his mother at 2200 hours and likely not around the time he was checked by Kathleen at 0245 hours." I think in explanation, if, if Caleb had been fed at around about 10pm, by 2.45am, all things being equal, the stomach would have to be empty by then or substantially empty. We're, we're talking of an interval there, as described, of four and three-quarter hours.

FURNESS SC: Your reference, which I'm trying to find in your report to "very likely", what page are we on?

WITNESS DUFLOU: I'm on page 29.

FURNESS SC: Thank you. Your opinion that it appears to you very likely that Caleb died some short time after he was checked by his mother and likely not around the time he was next checked by Kathleen, I suggest to you is somewhat inconsistent with your evidence earlier about the graveyard that exists for forensic pathologists who move in this territory?

WITNESS DUFLOU: It's certainly a problem in terms of stomach content description and assessment of how long it takes, but if it's assumed and I'll base this largely on experimental work, that the stomach in young infants tends to empty within one to two hours after a feed, in the presence of a large amount of milk in the stomach at the time of autopsy, in other words at the time of death, would be an indication Caleb died shortly, within an hour, maybe two hours of him being fed.

FURNESS SC: You also refer to the body temperature descriptions, which--

WITNESS DUFLOU: Yes and of course that's troublesome because--

FURNESS SC: It is, they're inconsistent aren't they Professor?

WITNESS DUFLOU: Depending on which body temperature description you use, Caleb was either warm or cold and I think it's fair to say, and I mention this in my report in fact, in that paragraph, that he was described as either warm or cold to touch, by ambulance officers.

FURNESS SC: So how can you take into account his body temperature in determining time of death when the body temperature is inconsistent in terms of the descriptions given by those who were present?

WITNESS DUFLOU: If the body temperature was indeed cold, then that becomes of some relevance.

FURNESS SC: But we don't know that do we Professor?

WITNESS DUFLOU: No we don't. Look I absolutely agree that we don't know what the body temperature was and I think it's important to emphasise as well that assessment of body temperature on the basis of what temperature a person feels like by touching the surface of their skin, is very unhelpful.

FURNESS SC: It is, but you referred to it and relied upon it Professor in coming to the view that it was very likely that he died some short time afterwards, in circumstances where the evidence was not clear?

WITNESS DUFLOU: I agree, it's not clear, but taking both into consideration, I say that it appears - and I base this mainly on the stomach contents.

FURNESS SC: So we're supposed to read your report without reference to - together with the body temperature descriptions, is that right?

WITNESS DUFLOU: I considered the body temperature but it was predominantly the stomach contents. I could certainly leave out body temperature, I would have no difficulty with that.

FURNESS SC: Would you leave out very likely as well, in the same breath Professor, given that you're leaving out together with body temperature?

WITNESS DUFLOU: I would say in the hour or two after he was checked, I would say I would put that as at least to the level of likely, very likely potentially, but I also maintain the view that likely he did not die around the time he was checked at 2.45.

FURNESS SC: And that's based on, according to your report, the body temperature and the general gastric emptying time?

WITNESS DUFLOU: Accepting the dangers of looking at stomach contents as a time of death.

FURNESS SC: So we're accepting those dangers, we're removing the body temperature from the consideration, I suggest Professor that your two stated reasons for coming to your view fall away, or at least are significantly reduced?

WITNESS DUFLOU: When I use the term "likely"--

FURNESS SC: Or "Very likely"?

WITNESS DUFLOU: Yes or "very likely", that's if you like a degree below probable, let alone definite. Likely to me means it is a likelihood, more likely than not, if you like.

FURNESS SC: Your Honour, is that a convenient time?

JUDICIAL OFFICER: We'll adjourn.

<THE WITNESS WITHDREW

ADJOURNED PART HEARD TO WEDNESDAY 20 MARCH 2019