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TRANSCRIPT OF PROCEEDINGS

INQUIRY INTO THE CONVICTIONS OF KATHLEEN MEGAN FOLBIGG

FRIDAY, 22 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 Cecilia Caroline Blackwell, Conjoint Professor at the University of Newcastle
Professor Robert Llewellyn Clancy AM, Clinical Immunologist

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SPECIAL INQUIRY

THE HONOURABLE REGINALD BLANCH AM QC

FRIDAY 22 MARCH 2019

INQUIRY INTO THE CONVICTIONS OF KATHLEEN MEGAN FOLBIGG

PART HEARD

JUDICIAL OFFICER: Yes, Ms Furness.

FURNESS SC: Thank you. This morning we have Professor Clancy and Professor Blackwell. Professor Blackwell will be wearing a hearing loop to aid her hearing, and we hope it works well.
<CECILIA CAROLINE BLACKWELL, AFFIRMED, AND ROBERT LLEWELLYN CLANCY, SWORN (10.06AM)

FURNESS SC: Professor, the hearing loop has a volume switch. Perhaps the court officer will increase the hearing, the volume, if--

WITNESS BLACKWELL: It's working well, thank you. Thank you.

FURNESS SC: Can I start with you, Professor Blackwell? Will you tell the Inquiry your full name?

WITNESS BLACKWELL: Cecilia Caroline Blackwell.

FURNESS SC: And your occupation?

WITNESS BLACKWELL: I'm retired but I'm working as a conjoint professor at the University of Newcastle.

FURNESS SC: You have provided three statements, and I'll take you through the detail of them later. One is entitled, 'Inquiry into Convictions of Kathleen Megan Folbigg,' and that document, which is dated 5 March 2019, was, I understand, a document you prepared at the request of those representing Ms Folbigg?

WITNESS BLACKWELL: Mm.

FURNESS SC: And the contents of that is true and correct, Professor?

WITNESS BLACKWELL: Yes.

FURNESS SC: I tender that, your Honour.

EXHIBIT #T STATEMENT OF CECILIA CAROLINE BLACKWELL TITLED "INQUIRY INTO CONVICTIONS OF KATHLEEN MEGAN FOLBIGG" DATED 05/03/19 TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: Then there is a second document headed, 'Advances in Diagnosis and Mechanisms Associated with the Pathology of Sudden Unexpected Death,' and that document was prepared at the request of the Inquiry?

WITNESS BLACKWELL: Yes.

FURNESS SC: I'm not sure that it's dated, but you provided that recently, in March?

WITNESS BLACKWELL: Yes.

FURNESS SC: That's right? Then there is a third document - I tender the second one, your Honour.

EXHIBIT #U DOCUMENT PREPARED BY CECILIA CAROLINE BLACKWELL TITLED "ADVANCES IN DIAGNOSIS AND MECHANISMS ASSOCIATED WITH THE PATHOLOGY OF SUDDEN UNEXPECTED DEATH" TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: A third document dated 13 March which is a supplementary report for the Inquiry concerning Caleb, and that arose from the first report that Ms Folbigg's representatives--

WITNESS BLACKWELL: Yes.

FURNESS SC: --engaged you to perform, that's correct? I tender that too.

EXHIBIT #V SUPPLEMENTARY REPORT OF CECILIA CAROLINE BLACKWELL CONCERNING CALEB FOLBIGG DATED 13/03/19 TENDERED, ADMITTED WITHOUT OBJECTION

FURNESS SC: Turning to your qualifications, Professor, you have a Bachelor of Science?

WITNESS BLACKWELL: Yes.

FURNESS SC: Doctor of Philosophy from Stanford?

WITNESS BLACKWELL: Yes.

FURNESS SC: What was the topic for your doctorate?

WITNESS BLACKWELL: Medical microbiology.

FURNESS SC: I think you might have to sit a little bit closer to the

microphone, if you could.

WITNESS BLACKWELL: Medical microbiology.

FURNESS SC: Thank you, and you have a Doctor of Science?

WITNESS BLACKWELL: Yes.

FURNESS SC: And you're a Fellow of the Royal Society of New South Wales?

WITNESS BLACKWELL: Yes.

FURNESS SC: So, you're not a medical practitioner?

WITNESS BLACKWELL: No. A medical scientist.

FURNESS SC: Thank you. You have said that you are retired, but nevertheless a conjoint professor of immunology and microbiology at the University of Newcastle. Is that a full time position?

WITNESS BLACKWELL: No, it's part-time.

FURNESS SC: Is it effectively honorary or do you actually work in that capacity?

WITNESS BLACKWELL: It's an honorary appointment, but I have - for personal reasons I haven't done a lot of laboratory work the past few years.

FURNESS SC: You have in your CV that you are visiting professor at the Faculty of Medicine and Health Sciences at the University of Newcastle. Are you still holding that position?

WITNESS BLACKWELL: That was when I came - 1999/2000, for a sabbatical.

FURNESS SC: You no longer hold that position?

WITNESS BLACKWELL: No, I am now a conjoint professor.

FURNESS SC: I see, thank you. You have contributed significantly to the profession in your area of microbiology, haven't you, Professor?

WITNESS BLACKWELL: Yes, the interface between microbiology and immunology.

FURNESS SC: You were given an excellence award by the International Society for the Prevention of Infant Deaths for your work in the role of infection and inflammation and sudden death in infancy in 2014?

WITNESS BLACKWELL: Yes.

FURNESS SC: And you have published very widely in the field?

WITNESS BLACKWELL: Yes.

FURNESS SC: And presented extensively at conferences, domestically and internationally?

WITNESS BLACKWELL: Yes.

FURNESS SC: Thank you. I'll come back to you, Professor Clancy, so--

WITNESS CLANCY: Yes.

FURNESS SC: --don't feel abandoned. Coming back to your first report, Professor Blackwell, if you have that in front of you, the first 11 paragraphs of your first report concern events that occurred back in 2000, before the trial of Kathleen Folbigg. Do you see that there?

WITNESS BLACKWELL: Yes, the first page.

FURNESS SC: Yes, the first and second page really, the first 11 paragraphs, and then you answer the question, "What matters could possibly be eliminated or require further investigation?" You then go through a number of matters, and I might just take you through some of those, if I can. You first deal with metabolic disorders, and your conclusion at the top of page 3 is that further investigation should include genetic assessments by whole genome sequencing. Do you understand that the Inquiry has obtained samples from each of the children and Ms Folbigg and is currently having that material sequenced, both in terms of the whole genome and, in respect of some, the whole exome? Are you aware of that?

WITNESS BLACKWELL: Yes.

FURNESS SC: That is the sort of work that you consider should be done now in respect of the children that will indicate material or results that were not known back then?

WITNESS BLACKWELL: It certainly would, yes.

FURNESS SC: I beg your pardon?

WITNESS BLACKWELL: It would contribute.

FURNESS SC: Thank you. Coming to paragraph 15 - this is on page 3 - you refer to the swollen uvula in Sarah might have resulted from inflammatory responses to respiratory infection. I note that attached to this report there is instructions which are tab A, and it's a bit confusing because there are different tabs, but perhaps if I can ask you to turn to page 16, which is the end of that report I am now addressing with you, and then the next document has an A on

it, and is page 1, "Instructions". Can you find that?

WITNESS BLACKWELL: Yes.

FURNESS SC: Then the next page is your professional experience and qualifications?

WITNESS BLACKWELL: Yes.

FURNESS SC: Then the next page seems to be the same question, a similar question, but not in precisely the same terms, to the one I have just taken you to. This one is what factors can be eliminated from further investigation in relation to the deaths. Did you see that? The matters that are set out on that page 3 and following pages, were they a draft, as it were, an earlier draft of the answers that you provided in your report proper?

WITNESS BLACKWELL: Yes, I used that as a basis to prepare the second report.

FURNESS SC: I see, so you prepared this first - this draft yourself?

WITNESS BLACKWELL: Yes.

FURNESS SC: Then from that you prepared the final report?

WITNESS BLACKWELL: Yes.

FURNESS SC: And you annexed it for completeness?

WITNESS BLACKWELL: That particular draft I think is the one I prepared for Mr Krisenthal.

FURNESS SC: I see, so that was the one in 2000?

WITNESS BLACKWELL: 2004.

FURNESS SC: 2004? Or 03?

WITNESS BLACKWELL: No, I prepared it in--

FURNESS SC: Nevertheless, it was around about the time of the trial?

WITNESS BLACKWELL: No, it was after the trial.

FURNESS SC: I see, so originally in 2004 after the trial and then updated in 2006.

WITNESS BLACKWELL: Yes.

FURNESS SC: In the - if I can call it the earlier report, paragraph 4, this is on

the document that's headed page 3, you say there is little evidence that the swollen uvula in Sarah was associated with her death. Do you see that?

WITNESS BLACKWELL: Yes.

FURNESS SC: And then in the current report, which is at paragraph 15 on page 3, you say that the swollen uvula in Sarah might have resulted from inflammatory responses to a respiratory infection.

WITNESS BLACKWELL: Yes.

FURNESS SC: Why the change?

WITNESS BLACKWELL: No. I think that there isn't much evidence that the swollen uvula was blocking her breathing.

FURNESS SC: There wasn't much evidence?

WITNESS BLACKWELL: I don't think that that was blocking her breathing. Looking at the evidence later and more detailed consideration of the inflammatory response that was probably going on, this is probably reflecting her response to the infection.

FURNESS SC: So, you are still of the view that there is little evidence it was associated with her death. However, you're noting now that it might have been caused by an inflammatory response.

WITNESS BLACKWELL: It might have been caused by the inflammatory response to the bacteria that were isolated from her.

FURNESS SC: Thank you. In relation to Patrick - I'm back on the first report now or the final report, I'm sorry, I should describe it as, on page 3, Encephalitis in Patrick, you refer to various matters in those few paragraphs. Is it effectively the case that the sequencing that the Inquiry is organising will assist in providing or may assist in providing more information about Patrick?

WITNESS BLACKWELL: At the time of Patrick's death there weren't screening - DNA screening methods for viruses so to eliminate that possibility, that would be one task that could be done to try to further determine what was going on in the child. In 2012 Professor Morris published a paper about reassessment of slides of cerebrospinal fluid and this might be useful in relation to looking at what was going on if the slides are still available. I don't know if they are.

FURNESS SC: Thank you. Coming to paragraph 21, immunodeficiencies, in your second sentence you say "There are indications in the children's medical histories to suggest that they had more frequent or more severe bouts of infection," and then "The whole genome sequencing may assist in that regard." The evidence that is before the Inquiry and was before the trial from those who had treated the children prior to their death, particularly the three older

children, was that their presentation to doctors and in some cases, emergency was no different from most other children in respect of respiratory matters. So, with that background can I ask you your source of information for "They had more frequent and more severe bouts of infection"?

WITNESS BLACKWELL: Reading the notes the children seemed to have quite a few infections.

FURNESS SC: Sorry, reading the what?

WITNESS BLACKWELL: From reading the notes and the information that was presented at the - the transcript of the first trial you'd think that the children were reported to have more infections, that could have been the perception of people caring for them. What I was referring to were the classical immunodeficiencies that Dr Hii would probably be looking for and I don't think there was any evidence of that in any of the children.

FURNESS SC: I don't quite understand that. Is it your expert opinion from the material you read at the time of the trial that allowed you to form the view that they had more frequent and severe bouts, is that what you're saying?

WITNESS BLACKWELL: What I'm saying is that I don't think any of these children had classical immunodeficiencies. From the medical histories they seem to have attended the doctor for various coughs, colds and flu. I've never had any young children so I don't know if that was normal or if that was more frequent but certainly infection and referral to the GP for treatment seemed come up in some of the material that I read.

FURNESS SC: You'd accept that they're GPs, who saw not only them but presumably many other patients, who formed the view that there was nothing out of the ordinary with their presentations, you'd accept that they would be in a better position to determine--

WITNESS BLACKWELL: I think the GP - the GPs' notes on the children would merit review.

FURNESS SC: Thank you. You then refer to what factors need further consideration and I'll take you over to paragraph 24 which is the IL10 gene hypothesis.

WITNESS BLACKWELL: Yes.

FURNESS SC: Again, with the sequencing being undertaken on behalf of the Inquiry, you would expect there to be some more information known about the role that that gene may have played in respect of these four children?

WITNESS BLACKWELL: They have only - this particular study, the report by Dr Drucker, only looked at one of the IL10 genes. There are others.

FURNESS SC: Can I just stop you there. I'm not referring to Dr Drucker's

work. I understand Dr Drucker's work. What I'm suggesting to you is that the question of the role of the IL10 gene will be addressed in respect of the four children by way of the whole genome and the whole exome sequencing of each of them and Ms Folbigg. That's right?

WITNESS BLACKWELL: Yes, and that will give you information not only about IL10 but about the other inflammatory genes and their variations that might be present in these children.

FURNESS SC: Thank you.

WITNESS BLACKWELL: At the time Dr Drucker did these tests they were quite laborious and you could only test for one or two genes at a time. The sequencing will be much more useful and much more easy to analyse.

FURNESS SC: Coming over to page 8 you refer in paragraphs 36 to 39 to the various organisms found in each of the older children and express the view that they are important.

WITNESS BLACKWELL: Yes.

FURNESS SC: His Honour heard from four forensic pathologists yesterday who I think it's fair to say were each satisfied that those coliforms and other organisms you identify were contaminants from the post mortem. Do you accept that their opinions based on their experience having seen many people or many bodies in these circumstances should be reliable?

WITNESS BLACKWELL: This is a contentious area. There are recent papers on the microbiology, post mortem microbiology in sudden death and I've noted some of these. Professor Morris from Lancaster looked at over 5,000 autopsies, mainly adults but there were 1,108 perinatal deaths and 468 SUDI.

FURNESS SC: Just let me stop you there. Professor Morris's qualifications and experience are what?

WITNESS BLACKWELL: He is a pathologist at the University of Lancaster--

FURNESS SC: Thank you.

WITNESS BLACKWELL: --with a major interest in the role of inflammation infection in sudden death.

FURNESS SC: He's a clinician?

WITNESS BLACKWELL: He's a clinician.

FURNESS SC: Thank you.

WITNESS BLACKWELL: What you have to think about in assessing

microbiology is if careful precautions are taken to obtain the sample aseptically about two-thirds of the blood samples are going to be negative so contamination even under less than optimal conditions is probably not a major consideration. Post-mortem interval had very little effect on the isolation rate of the organisms and--

FURNESS SC: Sorry, are you quoting from Professor Morris at the moment?

WITNESS BLACKWELL: Yes.

FURNESS SC: Thank you.

WITNESS BLACKWELL: And this was confirmed by Dr Weber and his colleagues from Great Ormond Street who looked at 507 SUDI investigations and what they found was that if the child was examined within the first two days you actually found more bacteria, more evidence of microbiological infection than if you looked later. So the idea of translocation and breakdown of mucosal barriers has to be taken with a grain of salt.

FURNESS SC: Let me stop you for a moment. Are you referring to a 2004 publication by Professor Morris?

WITNESS BLACKWELL: No. I'm referring to his 2006 publication.

FURNESS SC: You just need to tell me where I can find that.

WITNESS BLACKWELL: It should be in the reference list.

FURNESS SC: I'm referring to the heading Controversies on page 8 and there's reference to Weber in 2008 and Morris in 2004 so if I can just ask you, if I go to your references at the back we have a number of references to Professor Morris. There's a 2006 'Post-Mortem Bacteriology'?

WITNESS BLACKWELL: That's it.

FURNESS SC: Then there's a 2012 'Post-Mortem Cerebrospinal Fluid,' that's not the one you're referring to, it's the 2006.

WITNESS BLACKWELL: No, the 2006 'Post-Mortem Bacteriology.'

FURNESS SC: In relation to Weber?

WITNESS BLACKWELL: Weber, 2008 and 2010.

FURNESS SC: Thank you. Is it the case that in your opinion the research you've referred to should be preferred to the evidence of the forensic pathologists as to what they observed in each of the children on autopsy as being contaminants?

WITNESS BLACKWELL: The work by Professor Weber and his colleagues is

extremely thorough and what they suggested is the proportion of positive cultures decreased when the samples were taken later than 24 hours.

JUDICIAL OFFICER: Could you answer the question you were asked? Could you answer the question you were asked.

FURNESS SC: The question was, do you believe in your expert opinion that the Inquiry should prefer the research that you've identified, the 2008 research of Professor Morris and the research from Professor--

WITNESS BLACKWELL: Weber.

FURNESS SC: --Weber to the evidence of the forensic pathologists who have either observed or read the autopsy reports as to the findings in each of these children?

WITNESS BLACKWELL: The work by Professor Weber was on 507 post mortems of children.

JUDICIAL OFFICER: Could you answer the question you were asked, please.

WITNESS BLACKWELL: The question I will answer. Forensic pathologists are dealing with all ages and conditions. The post mortem on the sudden unexpected death in infant autopsies I think provides better information about the idea of contamination.

FURNESS SC: However, the four forensic pathologists who gave evidence were performing or reading the results of the performance of autopsies on children at least two of whom were thought to have died from sudden infant death, so they were performing the autopsies on children, infants.

WITNESS BLACKWELL: Yes. What I'm saying, this was a retrospective review from a major teaching centre done by a small number of pathologists so the conditions, the protocols and the techniques would have been probably as standard as you're going to get.

FURNESS SC: I take it from your answer that your opinion is that this Inquiry should prefer the results of those researchers over the evidence of the forensic pathologists as to their opinion as to what they saw or read about - for the reasons you've given?

WITNESS BLACKWELL: I wouldn't say prefer; I would say consider, that they should consider these I think very valid and extensive studies that have been done specifically in relation to sudden unexpected death in infancy.

FURNESS SC: What is your opinion as to the results of that consideration?

WITNESS BLACKWELL: The results of that consideration is that microorganisms probably contribute to a proportion of these deaths.

FURNESS SC: Probably?

WITNESS BLACKWELL: Probably.

FURNESS SC: And that's on the basis of the research and taking into account the forensic pathologists' evidence or putting that to one side?

WITNESS BLACKWELL: I wouldn't put aside the evidence of the forensic pathologists, but what I would say is that this group of forensic pathologists are of the opinion that infection may play a role in sudden infant death and that finding organisms like Staphylococcus aureus or Escherichia coli should be taken seriously in trying to investigate the cause of the death of the child.

FURNESS SC: Unless your Honour wishes me to press that point further.

JUDICIAL OFFICER: No I don't think so.

FURNESS SC: So coming back to your first report, then we come down to controversies, which is on page 8, are you following me there? And in relation to controversies?

WITNESS BLACKWELL: Yes.

FURNESS SC: You're saying despite some reluctance to accept that minor infections can trigger SUDI or SIDS there's a growing body of evidence that infection plays a role and then you list various research papers to that effect?

WITNESS BLACKWELL: Yes.

FURNESS SC: Can you help me with how it is that minor infections can trigger death?

WITNESS BLACKWELL: In the period most affected by sudden infant death syndrome, children have the lowest level of immunoglobulins that would be protective against infection, the material they received from their mother before birth has waned probably to the lowest and they will have the lowest level of protective antibodies that they will ever have in their lives. If an infection or infective organism gets into the body they're going to be dependent on the non-specific immune system, the white cells, to go in and deal with this, to kill the organism, to mop up the pieces and these will then be turned into antibodies, the white cells then produce antibodies against the organisms that they've dealt with.

A minor infection, say a large number of organisms get in, might trigger a very massive inflammatory response, it might not be a major pathogen like meningococcus, it could be a minor pathogen like Staphylococcus aureus or Escherichia coli, so the damage is done not by the organism itself but by the body's response to the organism; it's very powerful.

FURNESS SC: In those circumstances, bearing in mind that you're not a

clinician and speaking from your expertise as a researcher, what would you put as the cause of death if a child had a minor infection and was between the age of say two to four months, which is the peak for SIDS?

WITNESS BLACKWELL: It would depend on which infective agents were present, if the child had started off with a minor cold and then became - had a super infection with organisms in the nose and throat, which is quite likely, the response to these minor organisms could be very much enhanced by the original response of the body to the virus infection.

FURNESS SC: Bearing in mind your expertise, what would you call the cause of death from a child with a minor infection?

WITNESS BLACKWELL: It could depend on which organs system is going to be affected because the inflammatory mediators that are produced in response to infection can affect respiratory tract, the cardiovascular system, it can affect neurological response, it can affect sleep.

FURNESS SC: Perhaps if I can ask you to tell me the range of causes, depending upon some of the factors you've referred to. And if this is so far outside your expertise Professor that you don't feel able to answer it, by all means tell me?

WITNESS BLACKWELL: There are a variety of mechanisms that have been proposed--

FURNESS SC: Proposed by whom?

WITNESS BLACKWELL: By researchers into--

FURNESS SC: By researchers, thank you.

WITNESS BLACKWELL: --sudden infant death syndrome. Sleep disruption, sleep apnoea has been one particular aspect that's been looked at, disruption of the cardiovascular system has been one hypothesis put forward.

FURNESS SC: Can I just stop you there Professor, so to answer my question, you would refer to various pieces of research that--

WITNESS BLACKWELL: Yes.

FURNESS SC: --provide a variety of different mechanisms which may trigger death in the circumstances that you've postulated in the first sentence of paragraph 40?

WITNESS BLACKWELL: Because we don't know--

FURNESS SC: No, is the answer to that yes?

WITNESS BLACKWELL: We don't know what actually causes the death in

sudden infant death syndrome, but there is researchers who've proposed different mechanisms by which the physiology of the child could be disrupted and responses to infection, inflammatory responses to infection can affect all of these.

FURNESS SC: Coming over to your conclusions on page 11. You indicate that in paragraph 52 that you agree with the statement of Professor Byard, that the unusual background of this family with many issues of concern, does not negate the fact that potentially significant organic illness was present in these children?

WITNESS BLACKWELL: Yes.

FURNESS SC: And you annex Professor Byard's report which is annexure J and it's some many, many pages, post the report, it's the last few pages at the end of that document--

WITNESS BLACKWELL: It's the last page.

FURNESS SC: You've found it, so if you can turn to the last page, which is page 7. Do you see at the top Professor Byard indicates that he took into account not just the autopsy findings in isolation, but the occurrence of the four deaths within the same family and police concerns, and then he gave the causes of death as undetermined in each and with reference to what there was evidence that the child suffered from. So with Caleb it was laryngomalacia, with Patrick he couldn't exclude epilepsy, Sarah narrowing of the upper airway which is the uvula and Laura he couldn't exclude myocarditis. You understand that they were his conclusions?

WITNESS BLACKWELL: Yes.

FURNESS SC: And in relation to each of those, while there may have been some background of an inflammatory process, that was not the primary reason that he gave?

WITNESS BLACKWELL: It may not have been the primary reason, but it would've been a contributing factor.

FURNESS SC: I understand that, I said there may have been an underlying, you accept that?

WITNESS BLACKWELL: Yes.

FURNESS SC: Then there is the paragraph that you have quoted which is under conclusions, "In my view", sorry your paragraph is the last paragraph that you quoted, the unusual background, and then below that he indicates that those - three of those matters - can we have the whole page on please - he indicates that the three matters that I've just referred you to may have been coincidental to the deaths but alternatively may have been causative or contributory, and it can't be clarified, you accept that statement of his as well?

WITNESS BLACKWELL: Yes.

FURNESS SC: If I can turn to your second statement and this is the statement that you prepared at the request of the Inquiry. Coming to page 3 there's reference at paragraph to "Cause of death?", do you see that?

WITNESS BLACKWELL: Yes.

FURNESS SC: And then the triple risk hypothesis which you set out, now this is the Triple Risk Model that I think has been in place since about 1994 and is well regarded as being a model to apply in respect of SIDS or SUDI deaths, that's right?

WITNESS BLACKWELL: Yes.

FURNESS SC: Can we have the Triple Risk Model on the screen. Professor, evidence was given on Monday from Professor Horne, who is a researcher with a particular interest in sleep disorders in children?

WITNESS BLACKWELL: Mm-hmm.

FURNESS SC: And Professor Elder, who is a paediatrician who also has a particular interest in this area, and they gave evidence as to this being a model that's generally applied and the evidence has been consistent with that. Now you understand what's on the screen to be the Triple Risk Model?

WITNESS BLACKWELL: Yes.

FURNESS SC: Your triple risk hypothesis contains different factors to this and I'm not sure if it's possible to have both on the screen. Yes. I just need to understand the source of your hypothesis and the reasons for the difference between his model and your - what you call the triple risk hypothesis. So you have the developmental stage, which is the same I presume as the critical period of development, that is the first year of life, and the environmental factors which refers to the vulnerable infant, am I right in thinking that?

WITNESS BLACKWELL: Mm-hmm.

FURNESS SC: Then you have genetics, which probably closely fits with the exogenous stressor on the model, is that the best way of applying your hypothesis to the model?

WITNESS BLACKWELL: I would put male gender under the genetics of the background of the child, because we know that males and females have different inflammatory responses.

FURNESS SC: You can see that you have various factors that don't appear in the Triple Risk Model?

WITNESS BLACKWELL: Yes.

FURNESS SC: In particular under - you have under environmental factors, of virus infection?

WITNESS BLACKWELL: Yes.

FURNESS SC: Is that a factor that you have included in your hypothesis based on your research?

WITNESS BLACKWELL: Yes, because we've shown in a model system that pre-infection of the human cells with virus, common virus will enhance very much the inflammatory response to bacterium. This has also been tested in a model system with infant rats by Professor Blood-Siegfried at Duke University, in which a mild virus infection followed by exposure to a bacterial toxin, significantly enhances the lethality compared with the toxin or virus infection itself.

FURNESS SC: So is it appropriate to think of your hypothesis as being an overlay with inflammation and microbiology to the forefront of the Triple Risk Model, is that an appropriate way to view yours?

WITNESS BLACKWELL: Yes it's applying the Triple Risk Model to looking at the effects of inflammation and infection in triggering death.

FURNESS SC: Which is your specialty obviously?

WITNESS BLACKWELL: Yes.

FURNESS SC: Now, the other matters referred to in answer to the question of advances in diagnosis and mechanisms are primarily matters that can be either resolved or contribute to an understanding by way of the genetic testing that's being undertaken by the Inquiry?

WITNESS BLACKWELL: I think that's going to be the major step--

FURNESS SC: Thank you.

WITNESS BLACKWELL: --that needs to be assessed and is going to provide more information as to the cause of the death of these children.

FURNESS SC: Thank you. Now, just turning to your third report, this is the supplementary report relating to Caleb, and that effectively adds little to what you have already said in relation to Caleb. Is that fair?

WITNESS BLACKWELL: Yes. The question was, what was the source of the eosinophilic exudate?

FURNESS SC: And we just don't know, do we?

WITNESS BLACKWELL: And because there's no microbiology report we can't say anything more about that.

FURNESS SC: Thank you for that, Professor. Professor Clancy, can I turn to you?

WITNESS CLANCY: Yes.

FURNESS SC: Professor, are you currently retired?

WITNESS CLANCY: No.

FURNESS SC: What are you doing these days?

WITNESS CLANCY: Sorry, I - my wife would like me to be.

FURNESS SC: I'm sure that's right. What are you doing?

WITNESS CLANCY: I do a number of things. I--

JUDICIAL OFFICER: I'm not so sure that that's right.

FURNESS SC: No. Perhaps his Honour might be in a slightly different position, Professor, but perhaps we'll deal with you first.

WITNESS CLANCY: I, I still do a, a clinic once a week, on Thursdays, I'm involved in a number of research programs looking at the mucosa of humans and their relationship to bacteria and their responses through working with an ex-PhD student of mine, and I, I seem to get involved in a - quite a wide range of medical issues, some of which I wished I wasn't.

FURNESS SC: You need a bit more discipline, I suspect--

WITNESS CLANCY: Yeah.

FURNESS SC: --Professor Clancy, in saying no. Looking at your CV, which you provided as annexure B to the statement, you say that you initially trained in gastroenterology but more recently seen as a clinical immunologist. That's unusual terminology to my mind.

WITNESS CLANCY: I - when I trained in gastroenterology there was no formal program. I was always interested in immunology from student days and - but there was no pathway. I became one of the three people who established clinical immunology as a discipline in Australia and I was the first clinical immunologist at Prince Alfred Hospital and I took the Foundation Chair of Pathology in Newcastle, so when I say "people see me", they, they do see me as a clinical immunologist, although my primary training, for those reasons, was in gastroenterology.

FURNESS SC: Thank you. I think from your CV you mainly see adult

patients. Is that right?

WITNESS CLANCY: I do now. As a clinical immunologist I have seen children, when I was at Prince Alfred Hospital we provided the service for the Children's Hospital in immunology, all my working life I have seen children if people refer them to me, but predominantly now I am seeing people 15 or over, in the last two or three years.

FURNESS SC: You've got no particular paediatric training, I take it?

WITNESS CLANCY: No more or less than most general physicians of my age.

FURNESS SC: Thank you. Now, you have attached to your report, if I may say, a lengthy document that is headed - this is attachment A - "Submission for Degree of Doctor of Science." Now, I confess to not having read it all, Professor. I apologise for that. Can you perhaps explain to us what the document is?

WITNESS CLANCY: The, the document essentially covers my research career as a mucosal immunologist, which is what I am, and it examines numerous circumstances where different mucosal surfaces in different patients at different ages have met with different pathogens, different bacteria, viruses, and the way in which the immune response has reacted in those circumstances and how the interaction between the microbe and the response have led to outcomes, clinical outcomes.

FURNESS SC: Are we to assume that some of the material contained in this annexure has been published in various forms?

WITNESS CLANCY: It's all been published.

FURNESS SC: Thank you.

WITNESS CLANCY: With very, very few exceptions which wouldn't be relevant to here.

FURNESS SC: Thank you. Now, you were asked to provide a report by those representing Ms Folbigg?

WITNESS CLANCY: That's correct.

FURNESS SC: We have the letter that you were given seeking the report, and I don't know if we can have it up on the screen, and the second page. This is a list of the documents you were provided with.

WITNESS CLANCY: Yes, I, I, I was provided with most. There was one or two there I - not sure that I actually saw. I don't think I saw the handwritten notes of Dr Colley. There are one or two that - but most of those I did see.

FURNESS SC: Professor Cordner's report is not included in that list?

WITNESS CLANCY: I was certainly shown Professor Cordner's report.

FURNESS SC: Did you read Professor Cordner's--

WITNESS CLANCY: Absolutely, yes.

FURNESS SC: Are there any other reports that you - or documents you remember getting that are not listed in that list?

WITNESS CLANCY: No, I, I saw Professor Duflou's, Professor Cordner - yes, there's - yes, I, I, I saw - the only other additional ones over and above the autopsy reports, which I obviously saw, was the final microbiology reports, which I only got a couple of days ago.

FURNESS SC: All right, so you didn't take them into account when you wrote your report, or you did?

WITNESS CLANCY: I wrote a supplementary report.

FURNESS SC: Alright, well, coming to your report, you refer in your report and the annexure I have just referred to, to a study that you were involved in, a prospective study of 260 babies that you followed over a period of 20 - excuse me, 21 years, correlating clinical events with parameters of mucosal immune competence. Now, during the course of that study one baby died and that cause of death was attributed, presumably by you, to sudden infant death syndrome?

WITNESS CLANCY: That's partly correct. I set up a, a study over 21 years trying to get answers to questions that had been asked but not answered, and that is this relationship between microbes and the immune response. We had one of those children die from sudden infant death syndrome. I didn't know about this till one year - I had nothing to do with the, the diagnosis, the clinical care or, or the pathology report on, on that particular patient. I found out only 12 months later and then I went back and what, in essence, we had was really the missing link in, in SIDS, because if you notice - and I was interested in a lot of the points you made in the previous questions, that pretty much all of that is based on fairly old data, ideas that have been around for quite some time.

The problem was you do not do studies prospectively on SIDS, because a healthy - apparently healthy child suddenly dies, and, and so we had the world's first and only carefully done study where we could really identify changes that were going on that would not have been known by the clinician at the time. We, we follow that up, as you would have noticed, in a very careful, intensive study between two major centres, Perth and Newcastle, where we took near miss SIDS or, or ALTEs, the acute life-threatening event children, and at the time of their admission to hospital were able to examine them with the knowledge we had from the young baby that died, died from SIDS to see if the same changes were present, which essentially they were.

FURNESS SC: So your research began with the one baby and then you extended it to the 20 cases of ALTEs, as you've described in your report?

WITNESS CLANCY: That's correct.

FURNESS SC: When you dealt with the ALTEs, did any of those children ultimately die where the cause of death was attributed to SIDS?

WITNESS CLANCY: We only saw those children at the time they were in hospital, so we saw them over a two week period. I have no information as to what happened to those children after two weeks.

FURNESS SC: The Inquiry heard from Professor Horne. Do you know Professor Horne?

WITNESS CLANCY: No, I don't.

FURNESS SC: I think you were given her report, according to the documents.

WITNESS CLANCY: I don't think I saw that.

FURNESS SC: She wrote in her report about the latest research in respect of ALTEs and SIDS and her conclusion was that there was no longer considered to be a connection between ALTEs and SIDS. Are you aware of that recent research?

WITNESS CLANCY: No, I'm not.

FURNESS SC: Assuming that research is valid, and there hasn't been any evidence to the contrary, but assuming that's been valid, then your findings in relation to the 20 cases of ALTEs might have less significance in terms of SIDS. Do you accept that?

WITNESS CLANCY: No, I wouldn't accept that. I, I, I wouldn't accept it because I, I haven't seen this data of Dr Horne's. I'm surprised by it, because the - if you go back and look at the data of the ALTEs and the SIDS patients, the parallelism is, is quite remarkable, and it's quite different - was a very carefully done study with controls of other infected children with the main virus that was involved in the ALTE cases and probably most of the SIDS, which is respiratory syncytial disease virus, and the controls were markedly different to those in the ALTE cases and which were near identical to those in the SIDS, so, you know, it's certainly my belief that there is a very close relationship, at least with most of the ALTEs - of course these are complex and multi-cause issues, but most of them - I think it was 75% of the ALTEs.

FURNESS SC: But you don't know whether any of the 20 cases you considered ended up dying from SIDS?

WITNESS CLANCY: There - when I wrote 20, I went back and it's 26, but the - no, I don't, there's no way I can know that because I only saw them over a

two week period.

FURNESS SC: Perhaps if I can show you what Professor Horne had to say, and if we can have her report up on the screen. It's on page 5, and perhaps if we could just have the first page up first. This was a document that according to the letter of instructions was provided to you, Professor. Just have a look at the first page and--

WITNESS CLANCY: Yeah, no, I, I didn't, I didn't.

FURNESS SC: You didn't read it? Perhaps then if we can turn to page 5, unless you want to understand Professor Horne's expertise beforehand. You see that she has a PhD as well as a Doctor of Science, and perhaps if you've read sufficiently of her background we could turn to page--

WITNESS CLANCY: Well, I--

FURNESS SC: I'm in your hands.

WITNESS CLANCY: I'm just trying - sorry, I'm a slow reader.

FURNESS SC: No, please, I don't mean to rush you.

WITNESS CLANCY: So what - I'm just looking at the background now, am I?

FURNESS SC: For your information.

WITNESS CLANCY: Yeah. I'm not sure what - is she a, a clinician or a--

FURNESS SC: She's not a clinician.

WITNESS CLANCY: Okay. Okay.

FURNESS SC: And then if we can turn to page 5. So I don't expect you--

WITNESS CLANCY: Look, I, I really need to sit down and go through this carefully before I could give a measured opinion.

FURNESS SC: Certainly. Well, as I've said, the evidence that is before the Inquiry is that that connection is no longer a valid one. In the event that--

WITNESS CLANCY: Can I just ask you, I am assuming she is looking at children who have ALTEs and then subsequently may have SIDS. Is that correct?

FURNESS SC: Well, it's the relationship between an ALTE and SIDS, so--

WITNESS CLANCY: Yes, but I, I'm - they would have to be looking at patients and saying, "This person has had an ALTE, have they gone on to get SIDS?" Is that how she did it?

FURNESS SC: Well, let's have a look at what she said. It's on--

WITNESS CLANCY: Okay.

FURNESS SC: --the screen in front of you. She said--

WITNESS CLANCY: Because that's a very complicated situation.

FURNESS SC: I have no doubt it is, but this woman has spent I think most of her life dealing with these sorts of matters, but nevertheless, I don't doubt it's complicated at all: "In the 70s it was thought that ALTEs were precursors of SIDS and they were referred to as near miss or SIDS events, 80s and 90s there were various studies carried out." She then refers to various studies in relation to sleep and breathing and reflux.

WITNESS CLANCY: These were all theories that came and basically went. I think part of the problem is that they didn't have any hard data as to exactly what was going on in SIDS or ALTEs to really make those decisions. I, I think my group actually provided that.

FURNESS SC: I think her work is perhaps more recent, but--

WITNESS CLANCY: That doesn't make it better.

FURNESS SC: --let's not engage in a debate about it, other than to indicate that that's the evidence before the Inquiry and to invite you, if you wish to do so, Professor, to provide a response, if you wish, to that work of Professor Horne.

WITNESS CLANCY: Well, I'd be very happy to if I have the chance to read it and see what she's talking about.

FURNESS SC: No, no, no. I'm not meaning now at all, Professor. I mean subsequent to this.

WITNESS CLANCY: Yes, I'd be happy to.

FURNESS SC: If I can then turn to the rest of your report, page 2, you refer to having read the autopsy reports--

WITNESS CLANCY: Correct.

FURNESS SC: --and agreeing with the diagnosis made by the attending pathologist and agreed by consultants in each of Caleb and Sarah.

WITNESS CLANCY: Correct.

FURNESS SC: Then you agree with Professor Cordner and Duflou in the case of Laura and effectively in the case of Patrick.

WITNESS CLANCY: That's correct.

FURNESS SC: So that assumes that you read Professor Cordner's report--

WITNESS CLANCY: That's correct, yes.

FURNESS SC: --notwithstanding it's not listed on the document provided. You then continue down at paragraph 18 to the conclusion that you see no evidence that any child had been mistreated or any evidence of - external evidence or internal evidence of suffocating or alternative causes of death. Can I suggest to you, Professor, that the material you were provided with is of a limited nature given the material available to the Inquiry and from the trial. There have been many reports prepared by a variety of people, forensic pathologists, paediatricians and the like, and there has been evidence given by those as well as treating doctors including paediatricians, neurologists and the like, each of whom has formed a view and often given sworn and tested evidence in respect of it which you have not had the opportunity to consider.

So in light of that, I invite you in relation to paragraph 18 including the last sentence which I haven't read which is “any conviction of Kathleen Folbigg based on medical grounds in your opinion would be unsafe”, I invite you to consider that conclusion based on, as I've indicated, the limited nature of the material you've had available. What do you say to that?

WITNESS CLANCY: I understand your question but I'm not certain what additional information you would want me to have to change that view because I've examined - surely we're looking at evidence from post mortems and I've read every word of all the post mortems. I've seen the opinions of experienced people. It makes what I've said here I think - unless you can tell me there's information that I haven't got that would change that opinion, which I can't understand what it would be, that would not be helpful.

FURNESS SC: There is evidence that you have of different people's opinions from that of Professor Cordner and Duflou and you've read their reports.

WITNESS CLANCY: Yes, that's true.

FURNESS SC: You haven't read the reports or read the evidence of others who have had different views who are nevertheless well qualified eminent in their areas and have read all of the medical records.

WITNESS CLANCY: But I've read the pathology reports. I'm wondering what information you have that I don't have.

FURNESS SC: The information is as I've said, the evidence that these people have given before the trial and the reports they have written based on reading the medical reports on these children in addition to but not limited to the autopsy reports. If you consider that that additional material would not be of assistance to you given what you had, and you don't wish to revisit your

conclusion that's a matter for you. I'm giving you the opportunity to reflect upon it based on the additional evidence, Professor.

WITNESS CLANCY: Okay. I'm struggling to understand how that additional evidence would change my view but I'd be very happy to look at that and then change my view if I thought that I should.

FURNESS SC: Can the Inquiry take it that the view you've expressed in that paragraph and subsequent paragraphs is based on the material you read?

WITNESS CLANCY: Exactly.

FURNESS SC: Thank you. I have nothing further, your Honour.

JUDICIAL OFFICER: Thank you. Yes.

FURNESS SC: Your Honour, I'm told I haven't tendered Professor Clancy's report. There are two reports, the first one together with the letter of instruction dated 13 March 2019 and the supplementary report dated 17 March 2019.

JUDICIAL OFFICER: Are you tendering them as one exhibit?

FURNESS SC: I'm happy to, your Honour.

EXHIBIT #W TWO REPORTS OF PROFESSOR CLANCY DATED RESPECTIVELY 13/03/19 AND 17/03/19 TENDERED, ADMITTED WITHOUT OBJECTION

MORRIS SC: Your Honour, just in relation to the tender of those two reports, I suspect that the Professor's address in paragraph 2 is his residential address and to that extent if we could arrange to have that redacted.

FURNESS SC: It's also on the letter of instruction.

JUDICIAL OFFICER: The home address should be redacted.

MORRIS SC: Thank you, your Honour.

JUDICIAL OFFICER: Yes. Does anyone want to go before cross-examination? No. Do you have any cross-examination?

MATHUR: I have no questions for either witness.

JUDICIAL OFFICER: Ms Richardson?

RICHARDSON SC: No questions.

JUDICIAL OFFICER: Yes, thank you, Mr Morris.

MORRIS SC: Thank you, your Honour. Professor Blackwell, I'll direct my

questions to you in the first instance. Do I take it from your evidence this morning that you only spoke with the lawyer at the Legal Aid Commission representing Ms Folbigg after the trial had concluded?

WITNESS BLACKWELL: That's correct, yes.

MORRIS SC: You hadn't spoken to him or anybody else on behalf of Ms Folbigg's legal representatives before the trial?

WITNESS BLACKWELL: No.

MORRIS SC: Certainly, you hadn't spoken to them at any time after you'd spoken to Detective Senior Constable Ryan. Is that correct?

WITNESS BLACKWELL: No.

MORRIS SC: In paragraph 16 of your first report you make mention that it is - just excuse me a moment, your Honour - you recommend in relation to the cerebrospinal fluid the examination of inflammatory responses in the cerebrospinal fluid. Those processes to which you refer in paragraph 16 of your first report, were they available as at 2003?

WITNESS BLACKWELL: No. I was asked to write the report in 2004 by Mr Krisenthal after the trial.

MORRIS SC: I understand, but as to your suggestion about the retesting of the cerebrospinal fluid--

WITNESS BLACKWELL: Yes.

MORRIS SC: --was the technology to retest available in 2003?

WITNESS BLACKWELL: No.

MORRIS SC: No, it wasn't.

WITNESS BLACKWELL: No.

MORRIS SC: You make mention that there are new rapid methods for screening viral DNA. Do we take it from that those methods have developed since 2003?

WITNESS BLACKWELL: Clinical microbiology detection systems are developing rapidly all the time and certainly since 2003 you would be much more likely to find a virus if the virus was there.

MORRIS SC: I see. Is it possible that because of the effluxion of time and the effect on the samples, one might obtain negative results?

WITNESS BLACKWELL: It depends on how the samples have been stored. If

they have been frozen you might have a better chance of finding them. If you needed to rely on formalin-fixed samples I couldn't answer that question. You'd have to speak to somebody who is an expert in clinical microbiology.

MORRIS SC: But the point is that if that testing were to take place it might be impossible to actually identify the relevant inflammatory responses because of deterioration in the samples?

WITNESS BLACKWELL: Probably even frozen you won't be able to detect any of the inflammatory responses because these are very short-lived, quick-acting molecules. You might be able to find viral DNA by the new automated molecular methods.

MORRIS SC: If you were unable to find the viral DNA that might be a result of deterioration in the samples rather than the presence or absence at the time the sample was taken?

WITNESS BLACKWELL: That's right. You can't say - testing a 20-year-old sample I don't think if you have a negative you could say that was truly a negative.

MORRIS SC: In other words, there's a risk of false negatives.

WITNESS BLACKWELL: There is a risk of a false negative.

MORRIS SC: In relation to your evidence today about the swollen uvula and your opinion on page 3 and your earlier opinion in your report to the Legal Aid solicitor that you did not think that the swollen uvula - it's the annexure to your report in which you say, and I'll read it to you to speed things up: "Swollen Uvula. There is little evidence that the swollen uvula in Sarah was associated with her death." Was that based upon information that you had received at the trial and if so, what was that information?

WITNESS BLACKWELL: I thought that some of the opinion that was being put forward was that it was the physical obstruction of the air passage by the swollen uvula but I don't think that was probably a cause of death. I think the swollen uvula reflected the inflammatory responses that were going on to the bacteria that were isolated from Sarah.

MORRIS SC: In forming your opinion did you take into account the evidence of Professor Hilton at trial about the swollen uvula?

WITNESS BLACKWELL: I read Professor Hilton's comments at the trial. In any of these deaths there's no single cause. You can't say that it was the swollen uvula, it was a high level of IL6, it was the presence of bacteria in the throat. This was a multifactorial series of events leading to the death of a child. I don't think you can put your finger on one particular factor and say that's what caused the death.

MORRIS SC: In relation to some questions from my friend about studies by

Professor Morris and other studies by Weber, is it the case that those studies were based on a re-examination of forensic pathology material and that they identified that bacteria which had previously been thought by forensic pathologists to be contaminants were in fact determined after review by microbiologists to be pathogenic in the bodies of the deceased?

WITNESS BLACKWELL: They may have contributed to the series of reactions in the body leading to the death of the child. Again, this is a multifactorial thing.

MORRIS SC: Professor Blackwell, could you listen to my question. The studies that were performed that you referred to by Professor Morris on the one hand and Weber on the other were studies of forensic pathology findings where forensic pathologists had previously thought that the bacterium identified was contaminant and after microbiological assessment it was determined that those bacteria identified on pathology were in fact pathogenic - they weren't contaminants?

WITNESS BLACKWELL: No. They were more prevalent amongst the children who died suddenly and unexpectedly, compared with children who had died suddenly and unexpectedly with no infective cause detected.

MORRIS SC: Professor, the studies you referred to were a review of forensic pathologists' opinions about whether the bacteria were contaminants or not weren't they?

WITNESS BLACKWELL: Yes.

MORRIS SC: And after microbiological assessment by Professor Morris, he identified that the forensic pathologists were wrong in a certain number of cases, correct?

WITNESS BLACKWELL: That they had not taken the detection of a pathogen seriously.

MORRIS SC: Well that in fact the bacterium was not merely contaminant but was in fact present, correct?

WITNESS BLACKWELL: Contributing, most likely contributing to the death of the individual.

MORRIS SC: And so that determination by a microbiologist demonstrated that the forensic pathologists who had identified the bacterium as contaminant had got it wrong, correct?

WITNESS BLACKWELL: Step back a bit, there are--

FURNESS SC: Professor Blackwell, please. It's not clear to me your Honour and I'm not sure if it's clear to the witness, whether or not my friend's questions are solely related to Professor Morris' 2006 literature review or something else.

MORRIS SC: Well Professor Blackwell you raised the question, is the question of whether in your opinion, is the question about whether the existence of a bacterium within a body, the identification of bacterium within a body is a contaminant or not, is that really a question for forensic pathology or microbiology?

WITNESS BLACKWELL: It's a question for both, the question also needs to include where was the organism isolated, within a normally sterile site like the blood or the spleen or the lungs, the organism has to be taken seriously as a potential source of death.

MORRIS SC: Why is that?

WITNESS BLACKWELL: Something like streptococcus pneumonia or Neisseria meningitidis in the blood there'd be no question about this, the question comes to what is referred to by Weber, as the category 2 pathogens, things like Escherichia coli that are a normal part of your gut flora, if they get into the blood stream they can cause septicaemia, Staphylococcus aureus can be a normal part of the flora of your nose and throat, if it gets into your blood it can cause problems, it can produce toxins that are highly lethal, like toxic shock syndrome toxin, what you need to do is to look at where the sample was taken under what conditions the sample were taken, were they just sort of weeped and put into the jar or were they collected aseptically, so you have reduced the probability of contamination as much as possible.

MORRIS SC: And tell me this, is the time between collection and death relevant and if so why?

WITNESS BLACKWELL: There have been a number of I'd say categories of explanations as to why you would find microorganisms in blood after death, on one is called agonal events, during the course of death or resuscitation, that bacteria that are normally on the surface of the nose or the throat or the respiratory tract, are pushed into the bloodstream, that doesn't seem to be to hold up following Professor Morris' review and the work by Professor Weber and his colleagues. The other is that as the body decomposes, that organisms are released by the dying - the loss of integrity of the mucosal surfaces, according to Professor Morris, if the body is kept at 4 degrees, this is not a problem. The major problem is contamination by the person taking the sample.

MORRIS SC: So are there tests available that tend to confirm or disprove whether the presence of bacterium found at autopsy, were pathogenic or simply contaminant, and if so what are those tests, how would you look at that?

WITNESS BLACKWELL: I think you have to look at the clinical picture in the case of Patrick, who was very ill the night before he died, there were two organisms found in his blood, one was E.coli and two species of enterococcus, according to a very extensive study in 1997, if you find E.coli in the blood of a

patient, this is most likely to be a significant finding in 90 to 99% of instances. If you find enterococcus in the blood of an individual, it's about 70% probability that this is a true finding of this organism is causing problems. Patrick had fever and vomiting and was sweating the night before he died, this sounds to me like an infection.

MORRIS SC: Are there any other tests that can be done, I was specifically asking about tests to be done rather than a clinical picture, are there any tests that can be done that determines whether in the deceased there was an immune response that may determine whether the presence of the bacterium in the blood was incidental or contaminant or actually pathogenic at the time?

WITNESS BLACKWELL: It takes about a week for an immune response to develop, so if you found antibodies to the pathogen in the blood, then the person must have been exposed to it at least a week beforehand, I can't think of any specific tests of a type that you're asking for.

MORRIS SC: We've heard discussion about cytokines and so on--

WITNESS BLACKWELL: Those are very short lived, you have to take the sample very quickly, detection of these has improved enormously there are now automated tests for it, this wouldn't be useful on stored material these days.

MORRIS SC: But these days, the technology wasn't available at the time of these - the death of these children, but these days that would be a test which--

WITNESS BLACKWELL: It's not a standard test for I would say probably forensic pathology because it would be deemed too expensive and the idea that very powerful inflammatory responses could contribute to these deaths is not widely accepted amongst the forensic pathologists, all the forensic pathologists, the Norwegians look for these things but I can't think of any other country where they actually actively look for these.

MORRIS SC: But it's that sort of test which would determine, which would provide you with evidence as to whether in fact it was contaminant or in fact a pathogenic?

WITNESS BLACKWELL: Some organisms we would probably eliminate as being pathogenic, unless there were - the individual was compromised, if you found another species of Staphylococcus aureus, that would usually be a skin contaminant to be picked up when the blood sample was taken, if the person from whom the blood sample was taken had a urinary catheter in then you would have to take that more seriously, just finding an organism doesn't tell you that it's causing pathology, you have to look at the whole picture in order to figure out what's actually going on.

MORRIS SC: When we look at the whole picture you're looking for clinical signs of infection, correct?

WITNESS BLACKWELL: Yes.

MORRIS SC: And you're looking for signs of infection in organs at autopsy, is that right?

WITNESS BLACKWELL: Yes.

MORRIS SC: Anything else you're looking for?

WITNESS BLACKWELL: In the past we've looked for the toxins of Staph aureus and we found them in over 50% of babies from five different countries, this isn't a standard test, this is a research tool, Professor Hilton sent us a series from his collection and we found Staph aureus toxins in over half of the babies, the SIDS babies that he had examined. We found the same proportion in children from France and Hungary and about 65% among the children from Germany, but this isn't a standard test but we certainly know that these toxins can be lethal, toxic shock syndrome, food poisoning.

MORRIS SC: So those samples that you received from all those countries were samples from children who'd died of SIDS?

WITNESS BLACKWELL: Yes and Professor Hilton sent some sample from children who had died of other causes and we only found the toxin in two of them, one child had had cystic fibrosis and you would expect this because children with cystic fibrosis are colonised early with staphylococcus, and another child who had been in hospital for a very long time.

MORRIS SC: And what was the sample of children that he gave you who had not been diagnosed with SIDS?

WITNESS BLACKWELL: Without SIDS there was a very low proportion of them and finding the toxin was actually explainable from their medical conditions. The SIDS children, over half of them had the toxin in their tissues.

MORRIS SC: In evidence to my learned friend this morning you said that these children did not have the classical immunodeficiencies?

WITNESS BLACKWELL: Yes.

MORRIS SC: Just explain to his Honour what is meant by the classical immunodeficiencies?

WITNESS BLACKWELL: Some children are born without the ability to produce antibodies, components in the blood that help to mop up bacteria or viruses or toxins these are produced in response to exposure to of the child, to the organisms in the environment and they are also produced in response to immunisation, it's these antibodies that protect the children from childhood diseases and there is no evidence that I could in any of the reports, that these children had a classical immunodeficiency. Professor Clancy would probably be better to ask about the various categories of these deficiencies.

MORRIS SC: But I don't think we need to talk about the various categories of them, what you're saying is on your review, these children did not have any pre-existing immunodeficiency which would've explained the death?

WITNESS BLACKWELL: I don't think so.

MORRIS SC: Moving on can I take you to paragraph 46 of your first report, I take it from the first sentence in 46 with respect to Patrick, the hypothesis that there was a viral encephalitis is not supported any microbiological or immunological evidence?

WITNESS BLACKWELL: Virus wasn't detected and no immune response to any virus was detected.

MORRIS SC: So is his Honour to understand that even though they targeted the herpes simplex virus, and they found no sign of that, that the CSF tests and blood tests and so forth taken at the hospital on 18 October and in the days following, essentially excluded an encephalitis?

WITNESS BLACKWELL: Yes.

MORRIS SC: But that would leave open an undiagnosed encephalopathy?

WITNESS BLACKWELL: Yes.

MORRIS SC: And in relation to paragraph 48, is the fact - paragraph 48 of your first statement, is the fact that you've highlighted the word "profuse". "In the lungs Sarah had profuse number of coliforms." Have you emphasised that for a reason and if so why?

WITNESS BLACKWELL: Because there are very few infectious diseases in which one or two organisms is likely to cause disease, one is syphilis and the other is typhoid fever. For most infections you have to have a large number of the organisms present to overwhelm the body's defences. So it's a numbers game, the higher the inoculum of the infectious agent, the more likely the person or the individual or the animal is to develop disease.

MORRIS SC: And so was the existence of profuse number of coliforms an important factor when forming your opinion?

WITNESS BLACKWELL: Yes.

MORRIS SC: Your Honour, I note the time.

JUDICIAL OFFICER: How much longer will you be?

MORRIS SC: I might be another 20 minutes, your Honour.

JUDICIAL OFFICER: I think we should press on.

MORRIS SC: Okay.

FURNESS SC: Your Honour, I have a few questions following.

JUDICIAL OFFICER: Okay. Well we'll adjourn for quarter of an hour.

SHORT ADJOURNMENT

JUDICIAL OFFICER: Yes, Mr Morris.

MORRIS SC: Thank you, your Honour. Professor Blackwell, just before the morning tea adjournment we were talking about the absence of classical immunodeficiencies in these children. I want to take you to paragraph 17 of your report, please. Just read that paragraph to yourself and let me know when you've finished reading it.

WITNESS BLACKWELL: Yes.

MORRIS SC: You start the paragraph stating that there's recent evidence for associations between SIDS and SUDEP. You then go on to say that the hypothesis proposed is that death due to seizures initiates pathogenic signalling between the brain and the heart resulting in lethal cardiac arrhythmias. For the benefit of this Inquiry could you just explain the hypothesis about how mild infection in a child may give rise to an unexpected death?

WITNESS BLACKWELL: Right. There are a number of parallels between susceptibility to infection and the risk factors for SIDS. The first is age, particularly the age range in which the peak of SIDS classically occurred, two to four-month age range, when they have the least amount of antibody they will ever have in their entire lives. The second is the presence of older siblings. Their older siblings go to play groups or nurseries or schools and bring home whatever their colleagues have to pass on to the baby. Exposure to cigarette smoke enhances susceptibility to infection in a number of ways. First of all, smokers are more likely to have virus infections and the components in cigarette smoke are sticky and so it's like flypaper for a number of organisms and they just stick in greater numbers to the tarry substance on the buccal cells of the individual. Smoking will also reduce the anti-inflammatory responses which help to damp down the damage that's done in response to a mild infection.

If you look at the overall picture it's like a jigsaw puzzle. The hypothesis is that the factors that make a child more susceptible to infection are those that are found amongst the risk factors for SIDS and what we've done is to test a number of these to see how the risk factors would enhance or exacerbate infection. The latest publication was in 2015 in which we tried to put these various pieces of the puzzle together. The hypothesis includes not just infection, invasive infection, mucosal infection but also the production of toxins whether by E. coli or Staph aureus that can cross the mucosal barrier and

induce inflammatory responses in the child.

So far the studies that my group and other people have done have found that things like the prone sleeping position, which is a major factor in sudden infant death and when people started turning babies over the incidence disappeared. Professor Morris and his colleagues took nose swabs from babies from birth to about probably ten or 12 months. At the period when a baby started rolling over on its front the secretions in the nose would pool in the nose overnight and you got not only more bacteria but a greater variety of bacteria.

The prone sleeping position is also important because it raises the temperature of the nose. Normally the temperature of the nose is well below 37 degrees because of the passage of air back and forth. My colleague in ear nose and throat department measured the temperature of noses in the noses of children lying on their back and lying on their tummies and there was a significant rise in the temperature in the nose of these children. This is important because the toxins that are produced by the staphylococcus are only produced between 37 and 40 degrees and in five of these children when they were lying on their tummies the temperature in the nose rose to 37 degrees or over.

So while the prone position has been linked to things like sleeping problems or cardiac arrhythmias and things, there's a simple explanation in that you can have a pool of microorganisms in the nose of a baby lying on its tummy and the temperature may reach the point that the toxins can be induced. It's looking at just one factor or one hypothesis but trying to fit these pieces of the puzzle together and sometimes the pieces aren't very obvious and you want to take the scissors and cut the piece to fit in properly but you can't do that, you have to take all.

MORRIS SC: The toxins have what effect on the physiology of the child, just explain to his Honour.

WITNESS BLACKWELL: They can cause a massive inflammatory response, not just in children but also in adults. Toxic shock syndrome was a big problem because tampons were infected with Staph aureus and young women were developing toxic shock syndrome and some were dying.
Professor Morris had to investigate a case of one young woman who just sat up in bed one morning and dropped dead because she had a massive - not infection but toxicity due to the toxic shock syndrome, organisms just found in the tampon.

MORRIS SC: And does the toxin produced by the inflammatory response, is it--

WITNESS BLACKWELL: The toxin induces the inflammatory response and the inflammatory response can affect all of the physiological systems in the body, the heart, breathing and the neural responses, it's a very powerful toxin.

MORRIS SC: When you say the neural responses, are you talking about some sort of neurotransmitter disturbance?

WITNESS BLACKWELL: This has been investigated by Professor Kinney and her group in Boston and they are the people who have identified changes in receptors of neurotransmitters, increased or decreased levels of neurotransmitters, again it's a very complicated series of interactions and you would really need a neurophysiologist to explain all these problems but these interactions can be infected by inflammation.

MORRIS SC: And the inflammation having a bacterium as the cause, is that what you're saying?

WITNESS BLACKWELL: They bacteria or they toxins switch on these responses from white cells in the body.

MORRIS SC: Are you familiar with Professor Byard's book?

WITNESS BLACKWELL: Yes.

MORRIS SC: 'Sudden Infant and Early Childhood Death', might we have exhibit D up and it's volume 2 page 689. Are you familiar with this chapter by Professor Opdal?

WITNESS BLACKWELL: Yes.

MORRIS SC: And is there anything inconsistent with your view that appears in this chapter or is it largely consistent?

WITNESS BLACKWELL: It's quite consistent, the group in Norway have been looking at the role of infection and inflammation for a number of years and they were the first people to identify one of these components interleukin 6, in the spinal fluid of children who dies of SIDS and compared those which children who had died of infectious causes and those who died of other causes and the IL 6 levels were definitely raised in the children who had died of SIDS.

MORRIS SC: I'd like to take you to page 701 of that chapter. There we have, my friend showed you fatal triangles before and she asked you certain questions about that proposed by Professor Horne, I want to suggest that this is another that appears in Professor Byard's book, do you have any comment to make on the integers that make up this particular concept of the fatal triangle in SIDS?

WITNESS BLACKWELL: To the developmental stage I would also add the maturation of the night time body temperature cycle which colleagues in Leicester have shown are associated with other hormonal changes in babies, during the day the hormone cortisol is quite steady and at night it's fairly steady. But when the baby develops the lower night time body temperature which is associated with maturation and development, the night time cortisol levels drop like a stone and one of the members of my group assessed the effect of these levels, daytime levels, night time levels before the switch of the important developmental stage and the night time levels after the switch.

And what she found was that the daytime levels were perfectly capable of damping down inflammatory response and so were the levels at night before this developmental switch, but once the switch occurred there was this period where the very low levels of cortisol were not able to damp down the inflammatory responses and in fact they enhanced it. So this night time switch takes place during the period when many infants, those of European extraction, are susceptible to infection. They are unable to protect themselves because they haven't completed their immunisations and the maternal antibody is at its lowest. If the inflammatory response is switched on at night the cortisol levels are not sufficient to damp them down and it actually enhances them.

JUDICIAL OFFICER: Is this something you need to know about.

MORRIS SC: Yes your Honour it is important, it is important and I will tidy it up, it's my last point.

WITNESS BLACKWELL: If you look at the ethnicity factor--

MORRIS SC: I'm sorry, the ethnicity factor I don't need to know about your Honour. I don't need to--

WITNESS BLACKWELL: But it is important because once this switch occurs much later in Asian children, for reasons we don't yet understand, by the time this switch occurs they have been immunised more fully than their - they have lower levels of maternal smoking, they have more people around to keep them awake if they drop off or try to roll over facedown onto a sofa, so again this is multi-factorial and the developmental stage of the child is extremely important, not just for the immune system and the central nervous system but for control of various physiological mechanisms.

MORRIS SC: Just in relation to cortisol, the cortisol level affects the inflammation response does it?

WITNESS BLACKWELL: Yes.

MORRIS SC: And for instance if human - if an adult has an immune response difficulty because of drop in cortisol levels, they'll be given something like prednisone or prednisolone to try and bolster the cortisol levels to fight the inflammation, is that correct?

WITNESS BLACKWELL: I would address that through Professor Clancy, who is much more familiar with adult--

MORRIS SC: Okay, but cortisol is one of the - the issue of--

WITNESS BLACKWELL: Reduces inflammatory responses.

MORRIS SC: It reduces inflammatory responses?

WITNESS BLACKWELL: But in the small - the low levels that are present in babies following this physiological switch, they can actually enhance inflammatory responses.

MORRIS SC: These matters that we've been talking about, these scientific observations that have been made about things like nasal temperature, cortisol response et cetera et cetera, together with the other matters which you address in your report, these pieces of scientific evidence seem to have supported the basic hypothesis that infection has a strong connection with the incidence of SIDS, is that correct?

WITNESS BLACKWELL: I would say in a significant proportion of children infection may be contributing to the physiological events that lead to death.

MORRIS SC: Professor Clancy, just in relation to the cortisol level and the effect of cortisol on the inflammation response and so forth, would you just--

WITNESS CLANCY: Yes I - that's certainly so. I think it's probably a lot more relevant in a maturing young infant than it is in older children and adults where the levels do vary but have probably less significant effect on inflammatory responses under a much - they seem to become more tolerant to those changes but the younger child, the infant is more susceptible.

MORRIS SC: Is there anything that the further information that Professor Blackwell has given us this morning, is there anything that you wish to correct or contradict with respect to her analysis of things?

WITNESS CLANCY: I'd just like to make maybe two brief comments, one is on the issue of contamination which Professor Blackwell has commented on and I think added to, it's contamination is seen by forensic pathologists, probably intuitively to an extent and much more so than has been shown when standard post mortems have been looked at where the contamination rate is less than 10%, the second point, minor infections are incredibly important in SIDS, in the sense that they appear and certainly in our studies, they appear to trigger at a critical stage of changeover of the mucosal immune response, they trigger a bizarre immune response which is seen locally in the local tissues, we found it in saliva, other people have measured these antibody responses in cells which, after death.

So they play a critical role at a time when the mucosa is unable to cope and whenever that happens in any circumstance in humans, bacteria appear and particularly younger people staph and some of the streptococci which has appeared in at least one of these cases and then you get that series of problems as a result of that, and younger kids it can be even small amounts of toxins, in older people it can excite a different type of inflammatory type of response, I just wanted to make those two comments.

MORRIS SC: In relation to the discussion that you had with my learned friend with respect to the ALTE study and the extent to which ALTE, patients who

have had an ALTE then go on to progress to SIDS and the study of Professor Horne, you've got the capacity to examine that material of Professor Horne, and if you come to some significant agreement, prepare a short report addressing your studies, is that correct?

WITNESS CLANCY: Yes I'd be very happy, the comment I wanted to make was that the data that I talked about and presented was crystal clear objective data showing very similar bizarre and different immunological responses that were identical and only found in SIDS and ALTEs, whereas if you're looking later, you're looking for a whole variety of things that would change, people who have an ALTE, in a child, follow that child obsessively, they ensure that there's no smoke exposure, there's no - all of the various things because they're dead scared and the second issue is that these kids are moving into a different age range after their ALTE, so it's a very complicated thing to look at clinically, whereas if you look at the time and see the mechanism is exactly the same as you find certainly in the outpatient with SIDS which is the only one studied.

FURNESS SC: Professor Blackwell, paragraph 38 and 39 of your first report which is in relation to the coliforms, you refer to the 1992 publication of Gilbert?

WITNESS BLACKWELL: Yes.

FURNESS SC: I'm not sure if we have that available on the screen. We do. I want to take you to the table from which I believe you obtained your figure. Do you see there in relation to Sarah, you, halfway down, "The report indicated a finding of coliforms in an infant, conferred an increased relative risk for SIDS of 29," and you refer to that also in relation to Laura. Now, this article - we know it's a 1992 article, and the conclusion of the article, which will be coming up soon - I'll read it to you while it comes up. Yes, if we can just highlight the abstract, thank you. "The viral infection was not a major risk as long as babies were lightly wrapped. In heavily wrapped babies the presence of a viral infection greatly increased the risk of sudden infant death." You would agree with that?

WITNESS BLACKWELL: So this is the abstract?

FURNESS SC: It's the last paragraph.

WITNESS BLACKWELL: Yes.

FURNESS SC: Coming then over to page 174, table 3 sets out the potential bacterial pathogens, and do you see under "Coliforms", if one moves along to the third column, 29 is the odds ratio?

WITNESS BLACKWELL: Yes.

FURNESS SC: That's where you obtained the 29 from?

WITNESS BLACKWELL: Yes.

FURNESS SC: Then if we come down to the next table, table 4, in relation to coliforms, 37 - that is, the most - were found in the tracheal aspirate. Do you see that?

WITNESS BLACKWELL: Yes.

FURNESS SC: And in relation to the lung we have significantly less at 14.

WITNESS BLACKWELL: Yes.

FURNESS SC: And the spleen, we have three.

WITNESS BLACKWELL: Yes.

FURNESS SC: Now, you will be aware from the material you have read that in relation to Sarah, her coliforms were in the lung, as with Laura, and in relation to Laura alone, hers was in the spleen. Do you accept that?

WITNESS BLACKWELL: Yes.

FURNESS SC: Isn't it the case, therefore, that the odds ratio of 29 is not relevant to either Sarah or Laura?

WITNESS BLACKWELL: I think finding coliforms anywhere where they shouldn't be in an infant indicates that the child is unwell.

FURNESS SC: That may well be the case, Professor Blackwell, but the 29 odds ratio you referred to is based primarily on a finding in locations other than Sarah and Laura had their coliforms, isn't that right?

WITNESS BLACKWELL: Mucosal surfaces--

FURNESS SC: No, Professor Blackwell, thank you for providing an explanation, but I am asking you whether your figure of 29 was based primarily on findings of coliforms in places other than where Sarah and Laura had them. Is that right or not?

WITNESS BLACKWELL: Mucosal surface is mucosal surface.

FURNESS SC: No, just answer the question, am I right or wrong?

WITNESS BLACKWELL: You are correct.

FURNESS SC: Thank you.

WITNESS BLACKWELL: But what I'm saying is that it's not correct to categorise mucosal surfaces.

FURNESS SC: Thank you.

WITNESS BLACKWELL: If you find these organisms in a child where it shouldn't be, the child is probably ill.

FURNESS SC: Thank you, Professor, I needed you to explain the 29 figure and you have done that, thank you very much. I want to also refer you to the Morris paper, which is the 2006 Morris paper, and I think we have that as well. You gave some evidence about this earlier. On page 8 the take home messages are very helpfully boxed. The final take home message is:

> "A pure growth of a pathogen in a blood or cerebrospinal fluid should be regarded as a possible contributing factor to death at all ages, but corroborative evidence should be sought using a range of techniques."

I take it you would accept that as a take home message from that article.

WITNESS BLACKWELL: I'm sorry, I, I didn't hear what you were saying.

FURNESS SC: I beg your pardon. Do you see the fifth dot point?

WITNESS BLACKWELL: Yes.

FURNESS SC: You would accept that that is an appropriate conclusion one can draw from Morris's 2006 article?

WITNESS BLACKWELL: Yes, the main artefact is contamination, but when you have what is considered to be a potential pathogen you have to take it seriously. If this were - the contamination were Propionibacterium, or the staphylococcus that lives on the skin, I would be willing to consider that as contamination, but not something like E. coli or Staph aureus.

FURNESS SC: There is no suggestion in this fifth dot point that the author isn't taking it seriously. He is providing an opinion that it's a possible contributing factor and you need to look for other evidence. That's not inconsistent with taking it seriously, is it?

WITNESS BLACKWELL: Yes, the, the main post, post mortem artefact is contamination. It's not things that had previously been suggested, like agonal incidents or the transfer across membranes after death.

FURNESS SC: Let me just stop you there, Professor Blackwell. Thank you for your explanation, and you've had opportunities of giving that explanation before. Do you accept what the author of this paper which you rely upon in a number of respects has said in that fifth dot point, or not?

WITNESS BLACKWELL: Yes, I - that is a valid point.

FURNESS SC: Thank you, Professor. Can I also now refer you to the

Weber article, the 2008 Weber article you referred to? That's on the screen as well, and I want to direct your attention to page 1,852.

WITNESS BLACKWELL: To which?

FURNESS SC: It's coming up on the screen, 1,852, and on the second column, in the middle of the first main paragraph, beginning with the words, "The current challenge," that will be isolated for you, and us, Professor. Now, what the authors say there is that:

> "The current challenge, however, remains to determine the optimum methods for differentiating those cases that are truly infection from those in which the isolates might represent simple contaminants, Post-mortem translocation or incidental colonisation."

And then they refer to contamination being minimised with good technique, which you have evidence of, and further they say, and I quote: "Empirical evidence suggests that contamination is more likely to result in a mixed growth but there is little published evidence to confirm this at autopsy, and our results do not support this notion." So you see that?

WITNESS BLACKWELL: Yes.

FURNESS SC: Do you accept that conclusion?

WITNESS BLACKWELL: No, but if you look at his paper from 2010, what you find is a comment that polymicrobial cultures decreased from 61% to 46% with increasing time from death to autopsy.

FURNESS SC: That doesn't change the conclusion reached here, does it, Professor?

WITNESS BLACKWELL: So polymicrobial cultures can be valid--

FURNESS SC: But it doesn't change the conclusion that there is little published evidence to confirm this at autopsy. Is that right or not?

WITNESS BLACKWELL: In his - as I said, in the 2010 paper they addressed this.

FURNESS SC: But does the 2010 paper conclusion alter that conclusion, is my question to you.

WITNESS BLACKWELL: I think it does.

FURNESS SC: If so, if you can tell me the paragraph which indicates that their view has changed. You have a copy of it, I take it, the 2010 paper? Or are you relying on some reference in your report, Professor, and if so perhaps you could tell us which paragraph?

WITNESS BLACKWELL: In his - in the abstract in the 2010 paper--

FURNESS SC: The abstract?

WITNESS BLACKWELL: --it says:

> "Polymicrobial cultures decreased from 61 to 46% chi-squared for lineage and 12.88, p is equal to 0.0003, and cultures taken two or more days after death yielded significantly fewer isolates per sample than cultures taken less than two days after death."

FURNESS SC: I understand that, but how does that differ from the conclusion reached in the 2008 article?

WITNESS BLACKWELL: So I would say that there is evidence that polymicrobial cultures can be - are more than artefacts and more than contamination.

FURNESS SC: We'll need to look at these more carefully, Professor Blackwell, but thank you for your evidence in that regard. Can I turn to you, Professor Clancy? In your first report you referred at paragraph 17 to the finding of the growth in blood culture in Patrick, Sarah, and Laura, and you note that they are consistent with the recent findings of research by Professor Blackwell. I think at this stage you hadn't actually received the microbiology reports. Is that right?

WITNESS CLANCY: That's correct.

FURNESS SC: Then your next statement, the supplementary report, you had received those microbiology reports?

WITNESS CLANCY: Yep.

FURNESS SC: In relation to Sarah, at paragraph 7, you refer to the bacteria found in her lung tissue as commonly present in children that die unexpectedly and without any readily identifiable alternate cause of death, and it is not unique but rather characteristic of any disorder where protective immune mechanisms are compromised. Now, then you continue over the page to suggest that a confident diagnosis of SIDS on clinical grounds - and the microbiological report adds confidence. In terms of adding confidence, you also argue against post mortem contamination. Do you see that?

WITNESS CLANCY: Yes.

FURNESS SC: You will have heard my questions of Professor Blackwell in respect of the evidence of the forensic pathologist, which was unanimous in respect of what was found in Sarah's blood cultures were contamination. Do you suggest that the Inquiry should disregard or not give weight to the evidence of those forensic pathologists who either saw

the cultures or read about them, in relation to Sarah?

WITNESS CLANCY: What I am saying is essentially a couple of things. First, the presence of Streptococcus and Staphylococcus species in the, in the airways is what you would expect if there was some defective clearance mechanism in those terminally normally sterile airways, that they would come down from the upper airway tract and normally be coughed up and got rid of, but they were there, and I think that's a real finding. I think the, the issue of, of the E. coli is one where a better argument - how strong that is I think depends on the person you talk to.

Forensic pathologists I think have a, a long experience of thinking bacteria - so often, when there's more than one bacteria, as being contaminants, which is clearly not the case, in the airways, and this is relatively recent information, that no matter who you are or how old you are, if you have defective clearance you will get those bacteria, and depending on the age what type of bacteria. The younger person is more likely to get Staph, the older person will get Haemophilus influenzae, and things like that, and I, I'm - I feel here you've got strong data suggesting that's exactly what's happened in Sarah, and that that has been a contributing factor in, in, in her death, through, presumably the production of toxins.

FURNESS SC: Can I just draw your attention to the last sentence on page 2 under paragraph 11. You say that the subsequent cultures of the spleen grew coliforms suggesting contamination of that organ at this later time by gut bacteria.

WITNESS CLANCY: Yes. I think that's a stronger argument that this could be contamination although from the more particular microbiological experience of Professor Blackwell, she can make an argument that I may not be correct there. But I don't think that same argument of contamination can be applied to what is found in the lung because you don't get so much of the staph and strep. You're not going to get that very - very often at all from the gut at this age.

FURNESS SC: In relation to Laura you have a different view I think from Professor Blackwell. In relation to Laura at paragraph 14 you say that the microbiological reports are very different and you agree with the microbiological report that post mortem contamination is likely to account for the coliforms' presence.

WITNESS CLANCY: Yes, I do. I think that - my view would be that a stronger argument in this case could be made that there was contamination but I also believe that it's irrelevant to the cause of death.

FURNESS SC: Thank you. Thank you, Professor Clancy. I have nothing further, your Honour.

JUDICIAL OFFICER: Anything?

MORRIS SC: No, thank you.

JUDICIAL OFFICER: Ms Richardson?

RICHARDSON SC: No, your Honour.

JUDICIAL OFFICER: Ms Mathur?

MATHUR: No, your Honour.

JUDICIAL OFFICER: Thank you, Professor Clancy and Professor Blackwell, thank you for coming and you can go now if you want to, thank you.

FURNESS SC: Your Honour, can I indicate two things.

JUDICIAL OFFICER: Mm-hmm.

FURNESS SC: Firstly, those assisting your Honour will put together a bundle of the reports referred to in oral evidence and they will be circulated and ultimately tendered.

JUDICIAL OFFICER: Thank you.

FURNESS SC: Secondly, the Inquiry obtained a report from Professor Rawlinson at the recommendation of Professor Blackwell in relation to what testing might be carried out now in relation to the children and we obtained that report from Professor Rawlinson and I tender it but before I formally tender it I might indicate that his view - and Professor Rawlinson is a Senior Medical Virologist - is that although it is possible to perform sensitive molecular tests for infectious pathogens including viruses on the post mortem material available, there exist highly significant issues regarding testing, interpretation and the conduct of the tests which at this stage are not able to be resolved satisfactorily to make tests useful in determining cause of death in this case. Based on that advice and following Professor Blackwell's recommendation, nothing further is done.

I tender Professor Rawlinson's report dated - undated but it follows a discussion on 28 November last year with those assisting your Honour.

EXHIBIT #X REPORT OF PROFESSOR WILLIAM RAWLINSON TENDERED, ADMITTED WITHOUT OBJECTION

Your Honour, that's the week of evidence of the forensic pathologists and our two witnesses.

JUDICIAL OFFICER: Yes. You can leave the witness box, thank you.

<THE WITNESSES WITHDREW

FURNESS SC: Your Honour has previously made the direction that all reports by the geneticists, the hearing of which begins on 15 April, are to be provided to the Inquiry by Friday 29 March and from Monday 15 April to Thursday 18 April, the week before Easter, there will be evidence of the interpretation panel, broadly described, as well as Professor Ryan to whom, as your Honour is aware, a report was provided last weekend from those assisting Ms Folbigg. Then the evidence of Ms Folbigg will be heard on the week starting Monday 29 April, most likely at this Court as will the genetics evidence be given at this Court.

I submit, your Honour, a program of submissions following the completion of that evidence and that is that the submissions from Ms Folbigg's representatives be provided on 31 May or by that date which is four weeks from the end of the hearings with counsel assisting's submissions being available and provided on 17 May.

JUDICIAL OFFICER: That's on the basis that Mr Morris will have two weeks when he knows what your submissions are going to be.

FURNESS SC: And the prior two weeks to prepare his own submissions.

JUDICIAL OFFICER: Yes. Do you have a problem with that, Mr Morris?

MORRIS SC: Your Honour, I don't think we will because you can assume that we won't be leaving the preparation of submissions until 17 May.

JUDICIAL OFFICER: I think that's probably right.

MORRIS SC: Yes.

JUDICIAL OFFICER: So can we bring that back to 24 May?

MORRIS SC: Your Honour, I'd really appreciate - it's an incredibly complicated area.

JUDICIAL OFFICER: Yes, I know. It was just a question. You sounded so confident that I--

MORRIS SC: Your Honour, when it comes to written submissions I don't have the same confidence as cross-examination.

JUDICIAL OFFICER: Well, 31 May then.

MORRIS SC: Thank you, your Honour.

FURNESS SC: Your Honour, I'm referring to Ms Folbigg's representatives but clearly if anyone else with leave wishes to provide written submissions the same date would apply to them.

JUDICIAL OFFICER: Yes.

FURNESS SC: Given the experience over the weekend that I explained on Monday as to the very late service of material, I invite your Honour to discuss with Mr Morris the intentions of those representing Ms Folbigg as to the provision or even the engaging of any expert not known to the Inquiry.

JUDICIAL OFFICER: Yes. It's certainly important that we know, Mr Morris.

MORRIS SC: Yes, your Honour.

JUDICIAL OFFICER: I mean, we stretched a point to allow you a bit of latitude because it is a complicated matter and a lot of experts but we do need to have some certainty.

MORRIS SC: I understand, your Honour. Firstly, can I indicate that our genetic team is struggling to get the report done at the moment. We keep encouraging them and we're hoping that we'll have something by the 15th.

FURNESS SC: The 15th?

MORRIS SC: No, sorry, not the 15th, 29 March.

JUDICIAL OFFICER: Yes.

MORRIS SC: We're really moving heaven and earth to try and do it.

JUDICIAL OFFICER: All right.

MORRIS SC: Your Honour, I'll let my friend know with respect to that. With respect to other areas of examination, your Honour, the neurologist report of Ryan opens up the possibility - this relates to Patrick alone - of some congenital abnormality and, your Honour, we have no knowledge yet of what potential congenital abnormalities there may be. We're looking to try to identify whether there are any congenital abnormalities that are readily identifiable that may explain Patrick's death.

JUDICIAL OFFICER: All right.

MORRIS SC: We don't have an answer yet but I'll let counsel know as soon as we're able but this is a matter of high science; it's not readily capable of being identified. Your Honour, the other thing is that given that Ms Folbigg has now decided to give evidence, we are looking at reviewing the psychiatric and psychological evidence which was given at trial on the sentencing or that formed part of the material that was forwarded to us by counsel assisting. The fact is that there were some minor issues of things like Munchausen syndrome by proxy and I think there was also some analysis of the diary and, your Honour, I'll be reviewing that now that--

JUDICIAL OFFICER: Can I say, Mr Morris, that I would not be assisted at all in this Inquiry by a psychiatrist who wanted to come along and tell me (a) what

the words of the diary mean or (b) about the fact that a mother who had lost her babies would be upset and emotional and so on. Those are things that are readily apparent, I think, unless there is some other aspect of it.

MORRIS SC: There were some features of the psychiatric evidence at trial which may be relevant.

JUDICIAL OFFICER: Are you talking about Munchausen's?

MORRIS SC: There was Munchausen syndrome by proxy which was mentioned yesterday which is that syndrome where--

JUDICIAL OFFICER: I know it well. I've raised it on a number of occasions as a defence lawyer.

MORRIS SC: Yes.

JUDICIAL OFFICER: I've dealt with it as a judge on a number of occasions.

MORRIS SC: There was evidence there at trial that there was no indication of that syndrome in the clinical records and in the history of these children. You remember we had the list of potential causes of ALTE?

JUDICIAL OFFICER: Yes.

MORRIS SC: One of them was specifically Munchausen syndrome by proxy.

JUDICIAL OFFICER: It's not for me to advise you about that but it strikes me that that would very much cut across your general submission. You would be raising the possibility that - well, I don't think I should go into it.

MORRIS SC: Your Honour, I don't have a concluded view about it but there are some of these issues floating about.

JUDICIAL OFFICER: But you can see what I mean. That hardly sits consistently with the denials.

MORRIS SC: There's no doubt she denies it. The thing about it is that one of the possibilities that's been raised is that this was caused by Munchausen by proxy and the police psychologist who reviewed her said that there's absolutely no indicator. Munchausen syndrome by proxy is an intentional act to inflict harm upon the child.

JUDICIAL OFFICER: Yes. Yes, I know.

MORRIS SC: If there's no history of it, if the police psychologist has actually excluded it, then it goes to the character of the woman. It suggests that there is not a pattern of behaviour which suggests that she has got any problem there at all.

JUDICIAL OFFICER: It would be difficult to argue on the one hand that she had nothing to do with the deaths of these children and then on the other hand raise the possibility that she actually did have something to do with it arising out of Munchausen syndrome.

MORRIS SC: No, we're not suggesting that she did. We're suggesting that she didn't.

JUDICIAL OFFICER: But nobody has raised the fact that she did on that basis.

MORRIS SC: No, I understand. Your Honour, we may be at cross-purposes but I'll take your Honour's observations on board. I'll take your Honour's observations on board. I've been asked to indicate what areas we still see as potentially being relevant and which may give rise to further information.

JUDICIAL OFFICER: Well, I made observations about psychiatric evidence because there was a psychiatric report that was put forward in the petition for an inquiry and that sort of psychiatric report is not something that should be of any assistance to the Inquiry. But anyway, I'll leave it to you and we can talk about it later once you're in a better position.

MORRIS SC: Yes. I'll liaise with my friend and we'll try and keep it moving along.

FURNESS SC: With the greatest respect to my friend, advising your Honour at this stage of the Inquiry that there are "issues floating around" is not helpful. A final timetable has been set. The Inquiry has been continuing for many months. The question of Munchausen's by proxy is, to be frank, your Honour, bizarre to raise at this stage. No-one has suggested, let alone me, that that is at issue at all. The psychiatric report that I suspect my friend is referring to was on sentence, so it was done on the basis of guilt and for my part your Honour, assisting the Inquiry, I will not raise any issue of Munchausen by proxy and there is no issue that has been raised in any of the material that is before your Honour, in addition to the comments that your Honour made.

Secondly, in relation to congenital abnormalities, my friend is lacking in specificity as to what matters are being followed up, thought of, in respect to congenital abnormality. Is it the case that my friend is proposing to engage experts in respect of this neurologist report that there may be something other than the single hypoxic event that caused the ALTE and if so, your Honour it is my submission that your Honour should require those representing Ms Folbigg's interests to be clear and certain now, rather than a report from an entirely different expert, land with the Inquiry weeks later.

And perhaps your Honour if I can just add one additional matter. My friend has said that, notwithstanding that he's moving heaven and Earth, there are problems with those on Ms Folbigg's side who are involved in the interpretation and sequencing, there have been many invitations and opportunities given those, to speak with Dr Buckley, who is managing the process, or the Inquiry,

about those matters, and that has not been forthcoming. In the event there are difficulties, your Honour I submit that those representing Ms Folbigg should be required to put in writing, precisely what those difficulties are in order for those assisting your Honour, and Dr Buckley, to do what they can to overcome whatever obstacle exists.

Even though I said finally, there is one other matter your Honour. Finally, there has been ongoing issues as to Ms Folbigg being examined by relevant experts, I need not go into the detail publicly. That has not been completed, for reasons unknown to the Inquiry and certainly the Inquiry has done all they can to assist in that regard. Now my friend has not raised that, but if that is going to be a matter that is raised at some future time, in respect of matters that are floating about, then your Honour should know it now.

MORRIS SC: If I can deal with the last point first. Your Honour, we have been trying to arrange through the prison, some further investigations by an electrophysiologist, to assess the cardiac function, and I think on Monday, I think it was Monday, we provided a letter asking for the assistance of the Commission to help facilitate that further examination with Justice Health.

Now your Honour, that's been on the table between the two parties since Monday when we were - we were notified last week that he's having difficulties and he can't complete it, and to that extent, that is no secret. Now if anything, we are hopeful that those assisting your Honour will be able to assist us with that programme and that is a matter which is out of our hands and they've been well aware of it.

JUDICIAL OFFICER: Well I think we are, I mean the Inquiry is quite prepared to do whatever it can, but of course we're generally speaking not in a much better position than you are, except through the Crown Solicitor's Office, sometimes, but it has to be done through Corrective Services of course.

FURNESS SC: Your Honour might I just indicate, I apologise for interrupting. Your Honour has signed the letter to the Governor asking for everything to be done that the Governor can do to provide access by Ms Folbigg to whoever she needs access to to provide the testing. That's all that can be done by the Inquiry. What I understand and this has been conveyed to those representing Ms Folbigg for weeks, if not months, is that they have to obtain the referral to an appropriate person. The Inquiry can't refer Ms Folbigg to somebody. Those representing her have to refer her and we through the Governor, will ensure that she is able to go to that appointment, but we cannot make the referral, we cannot make the appointment. That is a matter for them.

MORRIS SC: Your Honour as I understand the position the referral has been made and the person to whom the referral has been made is saying he is having difficulty getting access to her. So your Honour I'm happy, rather than - it may be that there's a cross-communication here and I'm happy to liaise with Counsel assisting to try and sort it out.

JUDICIAL OFFICER: Maybe the letter to the Governor should be sent to the

person who is having the trouble so he or she can use it to deal with the prison authorities. Corrective Services are Corrective Services I suppose and they are a separate organisation and body. But if you've got a copy of the letter and if the person who needs things has a copy of the letter, then - have you got a copy of the letter?

MORRIS SC: I'm not sure that - look your Honour--

JUDICIAL OFFICER: Anyway, you can use the letter that we've sent to the Governor and that's as much as we can do.

MORRIS SC: I understand and we're grateful your Honour.

JUDICIAL OFFICER: So that's probably the way you should go about doing that.

As to the rest of it, we really are working to a timetable now and if there is anything else that you want, you really ought to advise us, may not necessarily be in writing but we need some specifics about what the problem is, within the next seven days really and we need an explanation of why, if you have some particular problem. We need to know that so that we can then perhaps have a mention and assess where we're going from there. So, if you can tell us within the next - by the end of next week, then we'll work it out from there.

ADJOURNED