Friday, 22 March 2013

(10.15 am)

(Delay in proceedings)

(10.30 am)

DR SIMON HAYNES (called)

Questions from MS ANYADIKE-DANES

THE CHAIRMAN: Good morning.

MS ANYADIKE-DANES: Good morning, Dr Haynes.

A. Good morning.

Q. You've provided two reports for the inquiry in relation to Raychel's case. The first is dated 14 December 2011, which would be at a time prior to you receiving some of the witness statements. The second, your supplemental report, is dated 22 January 2013, and for reference purposes the series is 220. Subject to anything you want to add or say during your evidence today, is that evidence that you would stand over as being accurate?

A. Yes.

Q. Thank you. You have previously assisted the inquiry as an expert in Adam's case and, in the course of that, you provided a CV. Dr Haynes' CV can be found at 306-032-001. I don't want to go through all of that, because we went through it in quite some detail in relation to Adam's case, but I've been asked to address a couple of issues with you and I'll do those quite

briefly. The first is that you're currently a consultant in paediatric cardiothoracic anaesthesia and intensive care at the Freeman Hospital in Newcastle-upon-Tyne; is that correct?

A. That's correct.

Q. And you have been there in that capacity since 1 August 1994?

A. Yes.

Q. And so that's really you in a specialist tertiary centre as opposed to in a district hospital, if I can put it that way?

A. Yes, it's work in a specialist tertiary centre, but with a fair amount of general paediatric work in the mix.

Q. You also do general paediatric work?

A. Anaesthesia, yes.

Q. If we then go to the second page, really, of your CV, 002, we can pull up your previous positions to see what your experience is of general surgery, general medicine and paediatrics. You were a house officer in Bangour, and that's where you did general medicine, and that would be 1983 to 1984.

A. Yes.

Q. And then you first became a senior house officer in Edinburgh, and that was obs and gynae, 1984 to 1985. And your first experience with paediatrics was as

a senior house officer in Monklands District General Hospital, February 1985 to July 1985. And that was general paediatrics, was it?

A. Yes. Very much general paediatrics in a district general hospital setting.

Q. So not anaesthesia?

A. No.

Q. And then you moved, in 1986, to the Royal Hospital for Sick Children in Edinburgh and you're a senior house officer there in paediatric surgery and this is also not yet as an anaesthetist?

A. No.

Q. And if I'm correct then from your CV, your first position in anaesthesia as a specialty is as a senior house officer in Glasgow Victoria Infirmary, and that's 1988 to 1989.

A. Yes.

Q. Is that a large hospital?

A. Yes, it's a teaching hospital in Glasgow. The configuration of the Glasgow hospitals has changed since then, but it provided access to all the major sub-specialist rotations and was a very good grounding for general anaesthesia.

Q. Then you're a registrar in anaesthesia, also in Glasgow, from --

A. Sorry, can I just cut back to the Victoria Infirmary attachment, which is perhaps pertinent to this case? During my time in Glasgow, you were sent for varying periods of time to train in the hospital, not dissimilar to the one we'll be discussing today. So I have experience working in a district general hospital outside a teaching hospital during my training.

Q. And that was doing your general anaesthetic training?

A. Yes.

Q. Thank you. And then you train as a registrar in the Glasgow training programme from February 1989 to May 1992. And you become a senior registrar in the Northern Region and thereafter you become a consultant in your present hospital; is that correct?

A. That is correct.

Q. Thank you. So when you were saying that when you were in the Victoria Infirmary you would go to district hospitals, had you been to district hospitals prior to that?

A. Yes, my first year after graduation at the Bangour General Hospital -- which no longer exists, it has been replaced -- which is just outside Edinburgh, and that's a medium-sized district general hospital.

Q. And that was when you were doing your general --

A. Yes.

Q. Monklands District General Hospital, is that something rather comparable to Altnagelvin?
A. Yes, Monklands District General Hospital is in Airdrie, which is about 15 miles outside of Glasgow, in a very deprived area, and it was a very busy paediatric medical unit where I learnt an awful lot.
Q. Thank you. I'd like now to move on to some of the issues that arise out of this case and the guidance that you've provided to us on those issues.
The first is the decision to perform an appendicectomy. But before I do that, firstly I want to make it clear that I'm really asking you in terms of what the position was in 2001, being the relevant time for Raychel, unless I ask you different or you feel another comparison is appropriate. And secondly, you will know that we have a number of different experts in different specialties, who have assisted the inquiry. We have a surgeon, we have a paediatrician, and some of the evidence that you have given or the opinions that you've expressed on certain issues relate to issues that they also have given an opinion on. When you're answering, can you make it clear when you're really dealing with a matter that, although you have some familiarity with it, you would consider to be more within another specialty so that we are clear on the

expertise and also make it clear whether you would defer in that case to another specialty, whether it's a paediatrician or surgeon?
A. Yes.
Q. Thank you. So then if we move to the question of the decision to perform the appendicectomy. The particular issue that I would like you to help us with is the question as to the comment you make in your first report. The reference for it is 220-002-008, about the wisdom of progressing so rapidly to surgery. You say that that needs to be questioned. I'm sure you're aware that Mr Foster has a similar view as the surgeon expert appointed by the inquiry, as does Mr Orr, who's a surgical expert appointed by the Trust. Both of them think that a wait-and-see approach might have been appropriate, but it's not the approach advocated by the inquiry's paediatric expert, Dr Scott-Jupp. He thinks that the decision that Mr Makar made to proceed in those circumstances was entirely appropriate.
So can I ask for your view as to why you think it might have been appropriate to have waited?
A. It is my opinion -- and in view of what you have said in your introduction to this question, I would defer to the surgical experts' view, but naturally, as an anaesthetist, you are involved in the care of people

going for surgery and you see a wide spectrum of severity of illness.
From the information made available to me, the impression I got was that Raychel came to the hospital, late afternoon/early evening, unwell, abdominal pain, but wasn't severely ill, she wasn't ... She did not appear to have a life-threatening illness at that point in time and, reading what was presented to me, her symptoms actually improved as the evening wore on. And although I'm in the context of this discussion not an expert surgeon, I was a little surprised when I noted that she was then taken for an appendicectomy at round about midnight.
Q. Well, in your experience, you've been, I presume, an anaesthetist dealing with paediatric appendicectomies.
A. Yes.
Q. That's something you presumably would have had quite a bit of experience with.
A. Yes.
Q. So far as you can glean from how she was described, how does that compare with the sorts of children that you would see coming in for you to carry out the anaesthetic work for those children? How does she compare?
A. The less-severely ill end of the spectrum and my opinion is that it might well have been prudent to have observed

her for a period of time and, if her situation had changed, she could have had her appendicectomy the following morning or, if it continued to improve, it may not have proven necessary.
Q. At the stage you're normally brought in, is the decision in your experience final at that stage or do you have any experience of it being considered that, "Maybe we will move to surgery," and then, on reflection, "Let's wait and see?"; do you have any experience of that?
A. Yes, I've experience of -- and I think it's better I put it in the context of me as a trainee rather than an experienced consultant. I have seen, as a trainee, decisions both ways when a more senior member of staff has seen the patient. I have seen decisions where the wait-and-see approach has been countermanded by a consultant, usually correctly, and I've also seen patients where the decision to proceed to an appendicectomy has been deferred following review of a patient or a child by a more experienced surgeon.
Q. That actually leads on to another issue that I wanted to raise with you, which is the involvement of a consultant in the decision-making over whether or not to proceed to surgery with Raychel that evening.
In the course of your report for the inquiry, you

referred to one NCEPOD report, which is the 1999 report, and you'll be aware that Mr Foster has referred to at least one other, which is the 1989 report. The 1989 report is "Who Operates Where?" and the 1999 report is "Extremes of Age".

Mr Chairman, just before I ask the question that I was going to pursue with Dr Haynes, during yesterday's evidence there was a question over the extent to which the NCEPOD would be -- people would be aware of it in Northern Ireland and whether or not its guidance would be something that would be followed. And there was a little bit of uncertainty as to Northern Ireland's role. I took the opportunity to actually just look up the full report of the NCEPOD report of 1989. I will have it paginated, but just so that you're aware, Mr Chairman, this was the first report after the CEPOD.

Just very briefly, it says that:

"An invitation to participate in the inquiry was sent to all consultant surgeons, gynaecologists and anaesthetists working in England, Wales, Northern Ireland, Guernsey, Jersey, and the Isle of Man, and a number of others."

And in fact, out of that, only ten surgeons and four anaesthetists declined to participate.

So the structure of it -- and we'll deal with it

more in governance, but just so we have it -- was that they asked all those people to participate by sending in anonymised data as to deaths and the system operated through a local reporter to be appointed in each hospital authority and the role of that local reporter was to ensure that the inquiry's office was sent details of all patients dying in the hospital within 30 days of surgery.

The appendix actually lists out all the surgeons by region and anaesthetists by region who responded. And when one looks at appendix B, which sets out the anaesthetists, one sees there is a separate section for Northern Ireland, and it lists there amongst those anaesthetists, for example, Dr Crean, who responded as an anaesthetist. When one looks at appendix C, which is the relevant appendix for the surgeons, in the Northern Ireland section, amongst the surgeons who responded, was Mr Bateson, who as you know was at Altnagelvin.

Then one looks at who the local reporters were who were coordinating this. Under the Northern Ireland section there is a local coordinator for the Altnagelvin Area Hospital, who was Dr Hamilton, a consultant anaesthetist. That's how it was intended to work. I'm sure that we'll look at it in more detail during

governance.

THE CHAIRMAN: Mr Foster said yesterday that NCEPOD gets data from Northern Ireland, as it does from other parts of the UK, as part of its research.

MS ANYADIKE-DANES: That's correct, Mr Chairman. In the tables one sees the data that comes from Northern Ireland. What I was indicating is that Altnagelvin Hospital had its own local reporter for that process.

What I wanted to ask you about the NCEPOD report is this: the first one, 1989, refers to -- in fact, the specific part that has been put to the witnesses can be found at 223-002-052. And it's:

"No trainee should undertake any anaesthetic or surgical operation on a child without consultation with their consultant."

And one of the reasons for putting this to you is your comment that sometimes a consultant has changed what happens in terms of surgery, either to advocate, yes, go to surgery now, or say, no, let's wait and see. What I wanted to ask you about is your experience in 2001 of that actually being followed in hospitals.

A. I think it's probably fair comment that the NCEPOD report's agenda really is to set standards. It's very obvious when reading the reports that many hospitals

contributing information towards these reports fell short of these standards. But it doesn't mean to say that there shouldn't be a clear aspiration in all hospitals in the country.

If I can digress, one of the major benefits of the Confidential Enquiry into Perioperative Deaths that has come about is the almost universal availability now in hospitals of operating theatres during daytime hours to deal with emergency admissions. Prior to that, there was always a great, or used to be, a significant conflict between planned operating and dealing with emergencies, which can be very variable in quantity. And the aim is to get patients operated on, dealt with, not in the middle of the night, when everyone is around, not fatigued and a better service can be delivered.

When it comes to the specific question as to who should be told who's doing what when, it varies a little in the context of where you are. Say for example, you're working in a specialist Children's Hospital where the whole environment is geared up to dealing with children or the ancillary staff are comfortable working with children of all ages, then there's possibly less likely of a need for, say, an experienced trainee to discuss absolutely everything with the duty consultant. If you look at a district general hospital where there

is occasional sporadic paediatric surgical practice where, for very good practical reasons, it has to remain within the district general environment, I think there is a greater need for senior people to be involved in the management and care of children presenting to surgery and I think that was very true in 2001.

Q. And when you say "involved", what do you mean by that exactly?

A. Just to be specific and say, "I would like you to tell me, Dr Haynes [for example], if you are about to anaesthetise a child, you are a trainee in this hospital, I'm the consultant responsible for it, you do not anaesthetise children every day at this point in your training, I think you should tell me what's going on", and the same for the surgeons. Because it's not a daily part of the practice, looking after children. It's something not out of the ordinary, but not a daily event.

In the environment like a district general hospital I think the consultant staff should have a more hands-on way of working and also accept responsibility for everything that is happening, particularly with regard to children.

Q. Well, I wonder if you'd like to comment on this, because this very issue that you are discussing now is something

that almost all the inquiry's experts have considered, certainly within their discipline, and more generally within surgery. For example, Dr Scott-Jupp expresses a view -- we don't need to pull this up, but the reference for it is 222-005-002 -- and he says:

"Although quite junior [he's referring to Dr Gund], he was considered competent to administer a general anaesthetic to a child unsupervised, which was usual practice at the time."

Would you accept that?

A. If I can go back to my training as a senior house officer, I think I would have been in significant bother if I had anaesthetised a 9-year-old child without telling someone, as a senior house officer, a consultant.

Q. You mean it would have been expected that you would have notified --

A. It would be expected that at least I would have said, "I have a 9-year-old child, the surgeons would like to take out an appendix tonight", and to some extent it would depend on the personnel involved, but that may have prompted a consultant to at least have been in the hospital while I was doing it at that stage or, if the consultant felt that my experience at that time was satisfactory, then I could go ahead or should go ahead

and do it, but at least he knew the responsibility was in the consultant's domain.

THE CHAIRMAN: And that was in the mid to late 1980s?

A. Late 1980s, early 1990s.

MS ANYADIKE-DANES: In fact, Dr Gund told Dr Jamison, who was a second on call -- she was also an SHO -- and he felt that any requirement to tell another colleague, if I can put it that way, as to what he was doing was satisfied by doing that. Can you comment on that?

A. Yes. I didn't have the full details of Dr Gund's experience when I wrote my first report, but prior to my supplementary report, it became clear that Dr Gund had in fact got a lot of experience anaesthetising children back in his home country. That said, he hadn't been at Altnagelvin particularly long and I imagine he would have found interface between the various members of staff and the cultural differences and ways of working -- he wouldn't have had chance to have got on top of that.

Q. So do you still think he really ought --

A. I think he was -- my interpretation is that he was technically competent, but he would have had difficulty in dealing with the nuances of interactions with nurses, with doctors from other specialties, and junior surgical staff. My feeling is, if you'll excuse some

colloquialism, that he'd have gone with the flow to a certain extent. He knew that he was technically capable of providing anaesthesia for Raychel.

Q. I'm asking you more for your comment whether he, notwithstanding that level of competence, should nonetheless let the consultant know that that was what he was going to do. Do you think, now that you remind yourself as to what his experience was, that he should nonetheless have notified the consultant, recognising he was still a trainee?

A. I believe that either Dr Gund or Dr Jamison should have notified a consultant and the likelihood is that the consultant would have said, "That's fine, carry on". But still, the consultant has the right to know what's going on with him or her as a responsible person.

MR QUINN: Mr Chairman, I think it's a quite important point on page 14 [draft], if we can go roll back the transcript slightly. There was an answer about the witness saying "I would have been insignificant ..." -- it read "insignificant" on the transcript. I think it went "I would have been in significant trouble". It's an important point from our point of view. The rest of it doesn't seem clear either.

THE CHAIRMAN: What happens, Mr Quinn, is that this is recorded and it's typed --

MR QUINN: I know that, sir.
THE CHAIRMAN: -- and this will be tidied up later. James made a point, rather pointedly, to Mr Campbell last week that this isn't the final version; it's the best he can do as he goes along.
MR QUINN: Having read them, I know that, but I just wanted to make sure that it is clear as to what he's saying.
THE CHAIRMAN: I understand. He can't be in insignificant trouble. Either you're in trouble or you're not!
MR QUINN: Also the sentence "telling someone" meaning does that mean, as a senior house officer, he should have told someone senior to him? That's the other bit.
A. That was my intention. As a trainee, if I hadn't told the consultant that I was doing something, I would have been questioned.
MS ANYADIKE-DANES: Thank you.
Then if we go to the NCEPOD report that you particularly highlight in your report, which is the 1999 one, you refer to this extract from it, which we don't need to pull up, but it can be found at 220-002-022:
"Anaesthetic and surgical trainees need to know the circumstances in which they should inform their consultants before undertaking an operation on a child. To encourage uniformity during rotational training programmes, national guidelines are required."

It's really the first part, which is that they themselves need to know. So irrespective of whether they're aware of the fact that that kind of guidance comes from NCEPOD, do I understand you to be saying that the procedures or practices in the hospital are that there is a clear understanding as to when they are to contact their senior colleagues?
A. Yes.
Q. And why in the context of Raychel's case did you particularly refer to that?
A. I think the timing of this or the date of this report is quite relevant to Raychel's case. It was published two years before Raychel died. So it should have been reasonably fresh in people's minds and been a topic for discussion in departments of surgery and anaesthesia around the country in the intervening two years.
Q. And what do you think that should have led to or at least what is your experience that that sort of thing leads to in other hospitals?
A. It leads to a discussion as to what is expected. There's invariably a breadth of opinion and there's always a delay in implementation while people think about the implications of this. It should have led to a clarity of thought as to what the correct procedure for monitoring and supporting junior staff in any

specialty -- or in anaesthesia and surgery, which is what NCEPOD relates to -- should be. And again, when it comes to reviewing training of junior doctors in any specialty, the reviewing bodies will ask, "What arrangements do you have for supervising trainees, both in hours and out of hours?". It puts the department on a much stronger foot and provides a better quality of training and better quality of governance if it is crystal clear what is expected of the trainees in terms of keeping their seniors or supervisors informed of what they're engaged in.
Q. In your report, you also linked the fact that Altnagelvin was some distance away from the Children's Hospital, which would be the regional centre. That meant, so far as I understood you in your report, that it was particularly important to develop what you refer to as "safe surgical services" because you were that distance away and you needed to be clear as how you could deliver safe paediatric services. Can you explain what you meant by that?
A. What I mean is if you look anywhere in the UK at the geography of the major children's hospitals, many of them are in densely-populated areas with district general hospitals within a fairly short radius, 10 or 20 miles away, and what happens in those circumstances,

almost invariably, is that children -- and the younger the child, the more likely it is to happen -- are generally referred to the children's hospital with a surgical emergency or a potential surgical emergency.
In situations where the district general hospital is a considerable distance from a specialist children's surgical service, then the hospital in that area has to develop to provide a safe, sound mechanism for dealing with the common surgical emergencies and common elective surgical procedures that are required in the children's population.
Q. And that was a general comment you made, but what did you mean it to mean in relation to Raychel's case?
A. That I think if a child like Raychel was taken to hospital, the child and the family should have the expectation that the framework is in place for a safe delivery of whatever was required to treat the child in that hospital.
THE CHAIRMAN: So the further you are away from the regional specialist centre, the better your systems should be in order to cope with emergencies or potential emergencies?
A. Yes.
THE CHAIRMAN: Thank you.
MS ANYADIKE-DANES: And did you draw that out in your report because you had some concerns as to whether Altnagelvin

had, at least as it applied to Raychel, established such a system?

A. Well, my thoughts about the need for Altnagelvin to develop its surgical services were crystallised before I looked at what seemed available to Altnagelvin and the events. When I was writing my reports the first thing I did was look at the map and see where Altnagelvin was in relation to Belfast and it's a significant distance away.

Q. Having seen how Raychel's care and treatment actually was administered, do you have any thoughts on this general point that you're mentioning?

A. Very generally, as things have unravelled, many questions have appeared about the mechanism and framework for dealing with children like Raychel in Altnagelvin at that time.

Q. In dealing specifically with the anaesthetists, you ask an almost rhetorical question in your report at 220-002-015, which goes on to Dr Gund's prescription role for post-surgical intravenous fluids. The question you ask is:

"Why was it that Dr Gund felt he was not in a position to ensure that appropriate fluid therapy was prescribed to a 9-year-old girl following an appendicectomy? It is the responsibility of the

consultants in the department where he was working to ensure that all trainees working without direct supervision had knowledge appropriate to the duties expected of them."

Then you go on to say that Dr Gund did not.

That was your first report and it was written before you had seen what his expertise was. But in the light of what you have seen, do you still hold to the view that, in that system, Dr Gund did not have the appropriate knowledge or expertise?

A. Having subsequently seen Dr Gund's CV synopsis, it is my impression that he knew what the correct fluid or the appropriate type of fluid to be given to Raychel was, he spelt it out and put it on paper and then it subsequently didn't happen, it got changed.

Q. And what's your concern about that?

A. My concern is why didn't he follow it through or why did other people not follow Dr Gund's prescription? Why did they see different?

Q. Well, the short answer from Dr Gund as to why he didn't follow it through is because he was told that wasn't the ward practice. As he understood it from Dr Jamison, the practice was that the anaesthetists didn't prescribe for the post-surgical fluid; that was handled when the child went back to the ward.

A. That is an unusual approach.

Q. Have you come across that before?

A. Not really, no. No.

Q. So it's not "not really", it's "no"?

A. It's a no.

Q. Can you see the benefit of such a system whereby that issue is handled on the ward as opposed to by the anaesthetist?

A. I can see no benefit at all.

Q. Well, can I put it another way? Do you see force and benefit in the anaesthetist handling the post-surgical fluids?

A. Yes, because the anaesthetist has been with that child, in Raychel's case, in the operating theatre suite for the best part of two hours. Dr Gund went and examined Raychel on the ward before anaesthetising her. He'd spent a considerable amount of time in close proximity to Raychel. He would have seen events unfold in the operating theatre and there's nothing which would suggest that there was anything particularly complicated about her fluid requirements. He clearly knew in his own mind that an isotonic solution, such as Hartmann's, would have been an appropriate fluid to use and, wherever I've worked, the system had been such that the anaesthetist prescribes an initial prescription at what

he feels is an appropriate rate, given in the context of the child's illness and operation, and it is reviewed at the next formal ward round or if something changes on the ward.

So I'd have expected Raychel to have gone back to the ward, the prescription for Hartmann's at 80 ml an hour to have been followed overnight, and then in the course of the morning ward round, which was I think about 9 hours, 8 or 9 hours after her return to the ward, intravenous fluid therapy is something that should have been looked at by those conducting the ward round and it should have been checked that there was an appropriate prescription made for that as part of dealing with Raychel before moving to the next patient.

Q. You prefaced your earlier answers by saying Dr Gund was new to Altnagelvin and unfamiliar with the clinicians in it and its systems, so would it not be fair to say he might have felt in a slightly difficult position about insisting on something if he was being told by somebody, although she is at the same grade as he, but nonetheless more familiar with the Altnagelvin systems, so, "That's just not how we do it here", and he might have felt in a difficult position? Would you not think that was fair?

A. I think that's very fair and that's what I was trying to allude to when I was describing his lack of familiarity

with the environment.
Q. But is it something that should have concerned him that he apparently, as the anaesthetist, was not going to have any input into what the post-surgical fluid regime would be, the immediate post-surgical fluid regime? Is that something that should have been of concern?
A. Yes, but I think on the basis of one case -- I don't know how much out-of-hours work he'd done before dealing with Raychel, but if it was something that had happened a few times, I would have thought he might have gone to the consultant in the department and said, "Just what is the arrangement, what am I expected to do, what happens in this hospital?"
Q. Is it something that Dr Jamison ought to have raised? If you think it's an unusual practice and one that perhaps is not an appropriate one in the interests of the child, is it something that Dr Jamison might have at least queried or taken to her consultant to ask why it was that practice?
A. Yes, I think, "Why do we do it like that here?", and it would have been, maybe not on the basis of one case, but after a period of time seeing it happening over and over again, saying, "Why are we doing that here?", because the doctors on the ward haven't seen Raychel before, they don't know what the situation is, they

don't know how much blood the patient may have lost in the operating theatre, they don't know what fluids may have been lost, so how can they formulate an instant appraisal of the situation?
Q. Dr Jamison's evidence, I stand to be corrected, was that she had experienced, for example, that the anaesthetist might prescribe Hartmann's, but whatever they prescribed, if that prescription stayed there, it was going to be changed when it went to the ward because the ward had a practice of using Solution No. 18. And there was a query of, "Why prescribe if you think that it's going to be changed?", to which I think the answer was: because we prescribe out of what we think is appropriate and, if and when it gets to the ward, if other clinicians wish to do things differently, then that's a matter for them on the ward. If that's the thought process, can you comment on that?
A. It's a strange way of doing things and I think it -- as to why that happened, I think it's one of the things that you're trying to address here. To me, it's a completely unsatisfactory system and I can't fathom why. Why are you taking a child from one environment where there's been close observations when they're in the operating theatre, putting her in a different environment, and saying, "Well, regardless of what

happened before, this is what you're going to get, that's it".
If I could give you a different example: say for example you have a patient who's had an operation for some form of blood loss and blood hasn't immediately been available, and at the end of the operation the patient ends up being very anaemic because blood hasn't actually arrived, say, and the haemoglobin is now 6 or 5. That patient clearly needs a blood transfusion, so you take that patient back to the ward: ah no, you can't have blood, we always give you Solution No. 18 here.
Q. In fairness, I don't think they said they wouldn't have blood available --
A. No, but what I'm saying is you have to manage the patient in the context of what's happened beforehand. So if you routinely prescribe something without thought as to what's happened before, what the likely circumstances are, then at some point in time you're going to run into trouble, as Raychel did.
MR STITT: I'm sorry, this is slightly novel theory that blood had been asked for and that Solution No. 18 had been given.
THE CHAIRMAN: No, I think it's not a theory; I think it's perhaps an extreme example Dr Haynes is picking.
A. Yes.

THE CHAIRMAN: I think the other problem, Mr Stitt, is this: it might somewhat flatter Altnagelvin to describe that there was a practice or procedure in place because Mr Gilliland wasn't aware, according to his statement, that the preoperative fluid became the post-operative fluid. So if he wasn't aware that that's what happened and he somehow thought that the fluids given during the operation continued afterwards, it rather suggests that there was no system in place.
MR STITT: That may be so. The point I'm making is this: to follow this example, which has been given -- and I know it's not being suggested that de facto it actually happened -- but what I was asking is that the inquiry might consider putting to the witness, quite apart from the theoretical dissatisfaction with the changing of the fluid regimes, the practical difference between Hartmann's in this case and Solution No. 18, more parallel as it were with the actual situation which occurred here.
THE CHAIRMAN: In the sense of asking Dr Haynes what difference might it have made to Raychel if she'd received Hartmann's post-operatively rather than Solution No. 18?
MR STITT: Yes, to bring it more into focus with what --
MS ANYADIKE-DANES: I'm going to come to that.

MR STITT: It was the blood reference that did throw me a little bit.

MS ANYADIKE-DANES: The final question I wanted to ask you, as you have been for some time a consultant anaesthetist, if the anaesthetist, irrespective of whether Mr Gilliland as a surgeon agreed, but if the anaesthetists thought that was what the regime was, that they might prescribe whatever it was they prescribed, but it was going to end up as Solution No. 18 on the ward because that's what the ward did and in fact the general practice was that they didn't prescribe at all for the immediate post-operative period, if that's what the anaesthetists felt, is that something that you would have thought the consultant anaesthetists should have taken up at that level with their colleagues if you think that's unsatisfactory, as I think you've described it?

A. Yes. I'd have thought that it's something that would have been clarified well before 2001 as to whose responsibility it actually was. Once you have made that decision, then stick with it.

Q. So in other words, to follow up from the chairman's point, if that had been done, you wouldn't have a situation where the anaesthetists thought one system was in operation, the surgeons thought another, and the

paediatricians, I believe -- at least at the outset of the evidence -- thought maybe yet another was in operation? That wouldn't have arisen and shouldn't have arisen, as I understand you.

A. Yes, reading the documents presented to me, I couldn't work out who actually was responsible for prescribing fluids in the post-operative period. Everybody seemed to say it was someone else's job or --

THE CHAIRMAN: [Inaudible: no microphone] there was no system?

A. Yes.

THE CHAIRMAN: That's a fundamental management training which has an impact on the children who come out of theatre and some of them will survive it and, unfortunately, Raychel didn't.

A. Correct.

MS ANYADIKE-DANES: If we move now directly on to the actual fluid management itself and pick up a point that the chairman made.

The preoperative fluid regime for Raychel was prescribed by Mr Makar. He took the view that she hadn't been taking anything since her supper by mouth, she was going to be some time nil by mouth before the operation, which he thought was going to happen later on that evening, so he prescribed some IV fluids for her.

He too, as you've probably picked up, wanted her to receive Hartmann's, and that was changed to Solution No. 18, but the rate he prescribed was 80 ml an hour. Do you have any comment on that as a preoperative rate?

A. It depends on Raychel's condition leading up to this. If he had seen her in the casualty department, spoken to her, spoken to the parents and decided that she hadn't been drinking all day and she was not going to be able to take anything by mouth over the next few hours, then, in the short-term, that wouldn't have been unreasonable. However you choose to look at it, the nominal maintenance fluid requirements for a child who we are assuming was 25 kilograms -- although I don't think she was ever weighed in hospital -- the computation comes out at around 65 ml per hour. The difference isn't huge and, over a period of a few hours, it wouldn't have made any difference.

Q. Well, Mr Makar -- I don't know if you've had an opportunity to look at his witness statement -- actually has an explanation. He recognised that 65 ml an hour would be a maintenance rate referable to her weight or what was taken to be her weight. But he increased it slightly to take account of various factors that he thought were relevant. And that's an issue. None of

the experts have been overly concerned about it because it wasn't going to -- it was assumed it wasn't going to last very long.

In fact, I can take you to the reference to it -- we don't need to pull it up. It is his witness statement 022/2, page 7, in answer to question 5. If I just give you the elements of his calculation, if I can put it that way. He recognised that you start off with the Holliday-Segar formula, which give you somewhere between 65 or 67 or thereabouts. He said that he factored in that she had been fasting since about 5.30, she had been in a warm hospital environment, and given that her IV fluids were only going to get started at about 10 o'clock -- in fact I think they were started at 10.15 literally -- there was a possibility, he thought, at that stage she might be in fluid deficit. As a result, he increased the rate which was going to start at 10 o'clock by 20 per cent, which brought it up to about 80 ml because he thought that would compensate for that. That was his logic. Do you have any difficulty with that?

A. No, that's very similar to what I said in the preceding answer and I wouldn't argue with it.

Q. That's fine. In your experience, who typically would be the person dealing with her pre-op fluids? Would it be

the surgeon or would it be the anaesthetist?
A. It would almost certainly be the surgeon who would have said, "We should admit the child to the ward, she requires IV fluids at the following rate", and write a prescription and she would have left the casualty department and in her paperwork would be a fluid prescription.
Q. As you'll have appreciated from the chairman's question, in fact what happened is that preoperative prescription, so both the fluid and the rate, turned into her post-operative fluid regime. Mr Makar was asked about that. He said he had no idea that that was a practice that occurred in Altnagelvin, and had he known that, he would have made a comment on it because, not to put too fine a point on it, he thought it was a potentially unsafe system. Leaving aside that, it took no recognition of what had happened in the intervening time and significant things might have happened. So he thought it was inappropriate. Can you express your own view on that as a practice?
A. It's unsatisfactory. You mean continuing a pre-op prescription --
Q. Post-operatively.
A. -- in exactly the same fashion? It's completely unsatisfactory because one doesn't know what has

happened in the operating theatre. Circumstances may have changed, the initial prescription may or will not take into account events in the operating theatre, how much fluid was given in the operating theatre, and it leaves me lost for words. It's just unsatisfactory.
Q. I take it when you say it leaves you lost for words that you have never come across such a system or practice before?
A. No, never.
THE CHAIRMAN: It also means, doesn't it, that even if nothing particularly adverse or significant has happened in the operating theatre, since Mr Makar has increased the preoperative rate from about 65 to about 80 ml to allow for any level of dehydration, that has somehow continued post-operatively --
A. Yes, without any thought.
THE CHAIRMAN: -- and with no apparent basis for that? So at the very least, the 80 should have been 65 post-op --
A. Yes.
THE CHAIRMAN: -- whether you factor in anything for ADH?
A. Yes.
THE CHAIRMAN: So even if this was a standard operation, insofar as there is such a thing, Raychel gets through it perfectly well, as in fact she appears to have done, and even if you revert to Solution No. 18, the 80 should

never stay at the 80?
A. No, it shouldn't have done, unless there was a reason that was thought out and shared with the people involved.
MS ANYADIKE-DANES: So does that point to the fact that there has to be some sort of a review post-operatively as to what her fluid needs actually are and she should be ministered in accordance with that review?
A. Absolutely, yes.
Q. We have not been able to find out exactly the origins of that practice, but the nurses certainly were of the view that that was a practice, that unless they were given some sort of prescription that showed differently, they simply reactivated -- I think the chairman used that expression -- the pre-surgical prescription post-operatively. And that was the practice that they put in play. If they knew it and anybody more senior knew it, either on the anaesthetic side, paediatric side or the surgical side, is it something that you think ought to have been addressed?
A. It should have been addressed a long time ago prior to 2001. Unfortunately, in the majority of cases, the human body will accommodate for mistakes such as these, but with a regrettable, albeit small frequency, things will not always go well and the body cannot cope with

it. And in dealing with children, one of the most important things is to get the fluid and electrolyte balance correct, even in the most basic cases, because it is so easy to make mistakes and it is to easy for things to go wrong, sporadically and occasionally and catastrophically.
Q. Before we continue on with what the post-operative rate might have been and what the post-operative fluid might have been, can I ask you something about the perioperative period? During the course of the surgery, Dr Gund had administered Hartmann's and I take it you have no issue with that as a fluid.
A. Absolutely not; I'd have used it.
Q. There was an issue about what the actual amount was that was administered to Raychel. You may recall from the anaesthetic record that all it says before the retrospective note -- the reference is 020-009-016 -- is under "fluids total" -- if we just pull it up. If you ignore the retrospective note part of it, there's a box there that says "fluids total" and that -- all it would have had at the time was "Hartmann's 1 litre". And I think, in fairness to him, Dr Gund appreciated that anybody looking at that might think that she had received a total of 1 litre of Hartmann's.
I asked Dr Jamison what the effect of that was,

whether that was relevant, and in her view it wouldn't have had any effect at all really if that actually had been what Raychel had received as opposed to what the retrospective note indicates. Can you comment on that?

A. I think this document raises several issues. First of all, when I prepared my initial report, I took it at face value and assumed that Raychel had received 200 ml of Hartmann's, which would be entirely appropriate. The second comment is "Hartmann's 1 litre". I presume that means that a 1-litre bag of Hartmann's fluid was connected to the intravenous cannula in Raychel's hand or forearm. Firstly, why was a 1-litre bag of such a large volume connected directly to a patient of any sort? Many hospitals no longer keep 1-litre bags in case of inadvertent administration of excess volume.

Secondly, it's custom, when you write an anaesthetic chart, to write down the total amount of fluid given. And when dealing with a child of any age up to Raychel's and maybe a little bit beyond, the standard way of administering fluid is you have a bag of fluid which is then connected to a measuring chamber and the desired amount of fluid is transferred from the reservoir bag, if you like, into the measuring chamber -- usually called a burette -- and the connection between the reservoir and the measuring chamber is turned off, and

then the known amount is given to the patient.

Q. In other words, you can't give any more than is in the burette?

A. Yes. So if, for example, fluid is inadvertently given at a faster rate than you plan, at least the volume given is controlled. If you connect a 1-litre bag of fluid to a child and the anaesthetist is distracted or doesn't pay attention to the rate it's going, it's all too easy to give 1 litre, which is more than you would want to give. The main point I think I'm coming to is that if a litre bag of fluid was connected directly to Raychel -- or any child -- without a measuring device in the circuit, so to speak, that suggests that that operating theatre environment wasn't geared up to dealing with children regularly. Because if you walk into any operating theatre that deals with children regularly, the nurses will prepare the appropriate equipment; you don't have to ask for it as an anaesthetist.

Q. Are we talking about 2001 still?

A. Very much, absolutely. So the main message is: if that is the case, this operating theatre was not set up -- the staff weren't regularly used to looking after children --

Q. Let's deal with the --

A. -- which is a different question from ... You asked if ...

Q. What's the significance if she had received a full 1 litre of Hartmann's? Is there any significance?

A. Assuming Raychel at the time was 25 kilograms in weight, that is 14 ml/kg within a fairly short space of time, which is a lot, assuming that she was adequately hydrated at the start of the procedure. The question then is: what does the body do with 1 litre of Hartmann's solution thereafter? When anyone is anaesthetised, the drugs used invariably cause the blood vessels to dilate and accommodate a larger blood volume. That's a simple effect of almost any anaesthetic agent. And when the patient is no longer anaesthetised, the circulation has to deal with the excess fluid that's in the body. So Raychel, if she did receive a litre, which for the sake of this discussion, and for the sake of the example, if we say she had a litre of Hartmann's solution surplus to her requirements, her body would have had to deal with that, and the way that the body would deal with it is that it would produce urine containing a lot of sodium and chloride, salt.

Her serum sodium was measured when she came to A&E. I can't remember the exact number, but it was normal, 137. Hartmann's solution contains sodium in the

concentration of 131 millimoles per litre. It is likely that she would have then produced urine which would have contained sodium up to concentration of 300/350 millimoles per litre, leaving behind water in the circulation, diluting down further the sodium present in the blood. So in the majority of cases, it probably wouldn't have mattered, and in Raychel's case is may not have mattered, but the fact is, if it did happen, it was through either carelessness or a system that wasn't set up to it and it would leave, if it happened, a further physiological challenge for her body to deal with and it would have dealt with it by excreting sodium in the urine, leaving water behind, which would then further dilute the sodium in the bloodstream.

Q. If you'd thought that had happened as the person who is now going to manage her post-surgical fluid regime, is it something that you would take into consideration when you were doing that or is it sufficiently insignificant that you don't need to do that?

A. If a child of Raychel's age and weight had received a 1-litre excess of Hartmann's, very much. It would have to be considered in the fluid given over the subsequent 6 to 8 hours. She'd have needed to be given less fluid and she most certainly would not have needed

to have been given any hypotonic solutions such as Solution No. 18.

Q. So although it might not have been harmful to her body in particular, it would have been significant for her fluid management because whoever was going to prescribe would need factor that into the type and perhaps rate of fluid?

A. Yes.

THE CHAIRMAN: Sorry, when you said that if she did receive 1 litre, that would be a gross mistake, wouldn't it? Giving her 1 litre of Hartmann's during the operation would be a gross mistake because it's so far in excess of what she actually needed; it's at least three or four times as much, isn't it?

A. Certainly double.

THE CHAIRMAN: Okay. And you said the body would cope with that by producing urine with a lot of sodium.

A. Yes.

THE CHAIRMAN: Okay. What then happens if, as appears to be the case on the next day, the Friday, she only passes urine twice, possibly a third time, but on the information we have only twice? That means that that excess of sodium doesn't actually leave the body or not all of it leaves the body?

A. Yes. But the fact that she didn't produce a lot of

urine, to me, suggests she didn't get a litre.

THE CHAIRMAN: Okay. So what we're looking at here is a theory and it's a rather unlikely theory, isn't it?

A. Yes.

THE CHAIRMAN: Then let's move on from that.

MR STITT: Might I also just point out, and I know everyone here is alive to it, but Dr Jamison has given her evidence that she quite clearly wrote the note retrospectively and it was double signed by Dr Nesbitt. There was a question of 300, or whether it was a quarter of the actual amount. I didn't think there was -- I thought this was a blind alley and had been established some time ago.

THE CHAIRMAN: I think it is. The only real debate was whether Raychel had received 200 or 300 ml --

MR STITT: And everyone agreed that didn't make a button of difference.

THE CHAIRMAN: That doesn't make a difference. The physical evidence from the next day suggests she didn't actually receive the 1 litre. Let's move on.

A. And I took it when I was going through the documents that she received the appropriate amount.

THE CHAIRMAN: To summarise the point, your concern is the way the note is recorded as the total fluid was "Hartmann's, 1 litre" and that shouldn't have been

written, but it's almost certainly not what was given either?

A. Yes.

MS ANYADIKE-DANES: I think there's a misunderstanding.

I entirely accept what Mr Stitt says and what you have said, obviously. The issue is not that she was given 1 litre, because Dr Jamison has given her evidence -- although, in fact -- and this is the point -- nobody would have known who was engaged in planning Raychel's post-operative fluids that she had not in fact been given 1 litre because the retrospective note isn't written until 13 June. So the reason for asking this is the significance of the note taking, because as Dr Haynes has said, it would have or should have affected her fluid management regime thereafter. That's the issue.

THE CHAIRMAN: Well, it didn't affect the fluid regime after. And the note taking on this note is inadequate, but, as things turn out, it didn't affect the note taking afterwards.

MS ANYADIKE-DANES: As things turned out, it didn't, but this is an issue of note taking and the significance of note taking, and the reason for going there at all is because it would be significant for fluid management if in fact a litre had been administered, as appears from

here, because that's what Dr Haynes has just said. That's the only reason for underscoring the significance of note taking.

THE CHAIRMAN: Well, I've got that point.

MR STITT: The people who were responsible for the prescription of the fluids and the amount of the fluids was primarily Mr Makar, who was aware of how much fluid had gone through, as was Dr Jamison. And we know how long the operation --

THE CHAIRMAN: I'm sorry, Mr Stitt. The person who was responsible for the prescription preoperatively was Mr Makar. The person who was responsible for the prescription post-operatively turns out to be Mr Makar, despite the fact that Mr Makar had absolutely no idea whatever that he was responsible for post-operative fluids.

MR STITT: Yes.

THE CHAIRMAN: He was taken aback and had he known that he was being held responsible for post-operative fluids on a preoperative basis, he would have said something at the time. I've got your point about this.

MR STITT: Just to make my point: no one is suggesting that for an operation of this length at 80 ml an hour, that there would have been 1 litre of fluid.

THE CHAIRMAN: Agreed, agreed.

MS ANYADIKE-DANES: Can I then ask you about the appropriate regime, as far as you're concerned, post-operatively? There has been quite a bit of debate amongst the clinicians and, for that matter, the experts as to whether one typically reduces the fluid rate to recognise the effects of the release of antidiuretic hormone and the effects of that on water retention. Can you help us with your view as to what you do about rate post-operatively?

A. Yes. If there's no significant fluid loss or reason to do things differently, it is standard practice to reduce the volume of fluid given as calculated against the Holliday-Segar formula. Can I bring up one of my references from my report?

Q. Yes.

A. Just bear with me a second, I'll get the page.

Q. Thank you.

THE CHAIRMAN: Is it your calculation of the Holliday-Segar formula?

A. Yes. The reason I want to bring this page up is one of my references is the Textbook of Paediatric Anaesthesia, with chapters written by the consultants at Great Ormond Street Hospital, with a summary of key points at the front.

THE CHAIRMAN: Can we start at 220-002-004, at the paragraph

which starts four lines down? Is that the reference that you want?

A. If we start there, we'll be able to find the relevant page because I think the authors in that reference -- although this is a book published subsequently, there are similar references in other textbooks published earlier. I'm sorry, I should have had this ready earlier.

THE CHAIRMAN: It's all right. Take your time.

MR CAMPBELL: It might be page 20.

THE CHAIRMAN: The last number being 020?

MR CAMPBELL: Yes.

A. It's reference number 3 from there.

MS ANYADIKE-DANES: Is that 193, which talks about replacement fluids and maintenance fluids and so on, 220-002-193?

A. Yes. If we can go back to the --

THE CHAIRMAN: Back one page?

A. Yes.

THE CHAIRMAN: 192, thank you.

A. And keep going back until we get the first page of the text.

THE CHAIRMAN: This starts at 180. That's the front page.

MS ANYADIKE-DANES: If I were to pass you up a hard copy, would that make it easier for you?

A. Yes. (Handed).

Anyway, the point I'm making is that in this, which is now a standard textbook of paediatric anaesthesia, the learning points are that 60 per cent is the calculation in relation to the Holliday-Segar formula for standard post-operative maintenance fluids. That's what we use where I work and is almost universally used up and down the country. So I concur with what's gone before. It certainly was common knowledge and common practice back in 2001 that this would be the case.

Q. The page that deals with the Holliday-Segar formula starting with the maintenance fluids is at 192; do you have the hard copy there?

A. Yes, I have.

Q. Then it goes on, at 193, to deal with the specific issue of maintenance fluids and replacement fluids. If you look at 195 --

A. It's page 196.

Q. Ah, there we are, "Suggested guidance for post-operative fluid administration after major surgery"?

A. Yes, and several points in this box are relevant to what we're talking about.

Q. Can I pause you there for a moment? Do you regard an appendicectomy as major surgery?

A. I think it has to be treated as major surgery because if

you do have -- if a child or anyone has an appendix that's perforated with an abscess, then you have peritonitis and it can be. I don't think it should be treated trivially. It shouldn't be treated trivially.

Q. If you take us to the particular bullet points in that box that you wanted to highlight.

A. Yes. The first one is:

"All children should be weighed before surgery. Plasma electrolytes should be measured at the start of intravenous fluid therapy and daily thereafter. Post-operative fluids should be prescribed at 60 per cent of maintenance, as described by the Holliday-Segar formula, for the first 24 hours."

THE CHAIRMAN: Your point there is that this is one of your bases for saying the standard approach in 2001 was to reduce fluids post-operatively by perhaps about a third, 40 per cent, to take account of SIADH?

A. Yes.

THE CHAIRMAN: The surgeons who gave evidence yesterday, in effect, said that that was their practice or the practice in their hospitals, but it was not a universal practice. Mr Gilliland, from Altnagelvin, has produced a paper which in fact says that it's disputed or at least debatable whether that necessarily assists children. This was attached, I think, to his third

paper. Have you --
A. I've read that in the --
THE CHAIRMAN: It seems that, in principle, you're along the lines of Mr Orr and Mr Foster yesterday. What do you make of Mr Gilliland's presentation?
A. It's outwith the normal majority view in this country.
MS ANYADIKE-DANES: To reduce it?
A. No. Not to reduce it. The normal majority view of practitioners in this country -- and I'd imagine throughout the world -- is to bear in mind that there's a propensity to retain fluid after a surgical insult and that the volume of fluid given intravenously should be reduced, typically by 40 per cent.
Q. And in terms of who might hold that view, is that common amongst anaesthetists and surgeons?
A. Yes.
Q. The text you've actually cited to help us with this is a 2008 text.
A. Which is unfortunate, but if you look at other texts published well before that, it's a common theme. It's just very clearly presented in that text.
THE CHAIRMAN: Of course, Mr Gilliland's papers are 2006 papers, so both of them are after the event. Is what you are saying today -- and really what Mr Orr and Mr Foster said yesterday -- is consistent with the

majority practice and view within the UK?
A. Yes.
THE CHAIRMAN: Thank you.
MR STITT: Might I ask, sir? It might be helpful, if we are dealing with the 2008 text -- but there are other texts which are equally supportive of the 40 per cent reduction and they are more contemporaneous, preferably before 2001 -- if the witness could at some point, a bit like the point yesterday dealing with an article which I hope will be produced. Maybe after today we could have sight of that article or those articles.
MS ANYADIKE-DANES: Dr Haynes, is this a text that you typically use?
A. Yes, for teaching purposes. It doesn't provide the depth of knowledge that I require for reference for my particular work, but for trainees I refer them to it.
Q. I note that it's the third edition. It may be that we can see what the relevant edition was for 2001 and see what's being said there.
A. Yes.
Q. But in any event, it would obviously be helpful if you can find a contemporary text that reflects your view.
A. Yes.
THE CHAIRMAN: Can I also just, on one perhaps slightly less significant point -- the amount of the reduction may be

more debatable, might it, because some of the papers I've seen in connection with Raychel have suggested that the post-operative rate might be reduced by, say, 20 per cent. This is a text suggesting 40 per cent. So while you say there's a broad consensus that there should be a reduction, is there the same consensus about the extent of the reduction?
A. No, I think what is important is that there's a consensus which appreciates that there's this innate tendency to retain fluid and you either allow for it or you have to be aware of it.
THE CHAIRMAN: Right.
A. And most doctors, I think, would make some reduction, whether it's 20, 25 or 40 per cent is not crucial, but it's an awareness of the actual problem more than how it's dealt with which I think is important.
THE CHAIRMAN: Then does that lead into a point, which we'll come to later in the morning, that when Raychel was not passing urine and was certainly not being recorded as passing urine and her condition was deteriorating, if a doctor was called in, particularly a senior doctor, they might have recognised the risk that a cause of this might be the syndrome?
A. A component of it, yes.
MS ANYADIKE-DANES: Before we leave this issue of the rate,

in your first report, which is at 220-002-004, you say that the Holliday-Segar formula actually produced, if you like, a more than adequate maintenance level. In fact, you refer to it by saying:
"It's well recognised that the Holliday-Segar formula suggests an excessive volume of fluid, but it's often felt to be an appropriate starting point for adjustments."
What do you mean by "it's well recognised"?
A. Really, if you discuss with colleagues or if you discuss with trainees, "How much fluid are you going to give this fluid?", people will often say, "There's a Holliday-Segar formula, but in the following circumstances it may be too much, but you won't be far off if you use that as your starting calculation".
Q. Yes. So if you actually adhere to it, barring some specific features, the child is likely to be very well hydrated?
A. Yes.
Q. Then if we go to the rate, you've suggested an appropriate discount. How significant is it that that didn't happen and that what actually happened was that she went back on to the 80 ml an hour rate so far as you're concerned?
A. As far as I am concerned, it is moderately significant.

It's more significant in terms of inattention to detail and looking at what was going on. She shouldn't have been prescribed 80 ml an hour and many people would say she shouldn't even have been prescribed 65 ml an hour. But I think it draws attention to the mechanism in the hospital whereby no one actually checked the rate of fluid administration. Not enough thought was given to what she was getting.

Q. You spoke earlier in answer to the chairman about if you weren't going to reduce the rate then your alternative -- and I think it was Mr Orr said this yesterday -- is actually to closely supervise the child if you're not going to do that and I think you said something rather similar yourself. What would that involve so far as you're concerned?

A. If for the sake -- well, Raychel did go back to the ward in the early hours of the morning, receiving 80 ml an hour of fifth-normal saline in glucose. If that continued, what should have happened at the ward round the following morning, as part of the procedure, would be the doctors carrying out the ward round should have examined Raychel, both in terms of her appendicectomy and generally. They should have looked at what drugs, medicines, she was receiving, they should have looked at what fluid she was receiving, checked the prescription

for it, noticed that it had been excessive, and reduced it accordingly.

Q. In fact, if we just pause there when you say check the prescription. As we know, Dr Gund wanted to write a prescription -- in fact, he wrote a prescription for it and ultimately deleted it. Leaving aside the type of fluid, which I'm going to ask you about in a minute, the rate he had was 80. Can you express a view on him prescribing a rate of 80 if it's Hartmann's as opposed to 80 if it's Solution No. 18? Does it make much difference so far as you're concerned?

A. As far as I am concerned, if it had been 80 ml an hour of Hartmann's, the chances of Raychel coming to harm would have been less.

Q. So that would have been less significant?

A. It would have been less significant?

Q. Yes.

A. It would have been in the realms of oversight rather than mistake.

THE CHAIRMAN: And if she had been getting 80 ml of Hartmann's and if she wasn't passing urine, then the sodium level in her body would not have plummeted?

A. I think that's the case. I believe that to be the case.

THE CHAIRMAN: Right. So she would have been receiving too much fluid for too long, but it would not have had the

disaster which persistent 80 ml of Solution No. 18 plus inattention to detail of her observations brought about?

A. Yes.

MS ANYADIKE-DANES: So that just leads on to the question that I wanted to ask you. I take it from the way you've answered already that you would have considered, leaving aside the 80 ml issue, the prescription that Dr Gund wanted to have was entirely appropriate?

A. The Hartmann's?

Q. Yes, for the post-operative period.

A. Yes.

THE CHAIRMAN: Was it?

MS ANYADIKE-DANES: I said leaving aside the 80. The type of fluid: was that entirely appropriate so far as you were concerned?

A. Yes.

Q. In your view, should that type of fluid have carried on until the ward round when somebody else would take a view as to what her requirements were at that stage?

A. Yes, that would have been safe and appropriate.

Q. And in fact, that isn't what happens, as you know. She goes on to Solution No. 18 and she goes on to Solution No. 18 at 80 ml an hour.

I'm going to come to the ward round slightly separately, but in terms of what's happening to her over

that period, I think she goes on to Solution No. 18 at maybe about 2 o'clock in the morning. Assuming the ward round happens at about 8/8.30, what's the significance of the fact that she's on Solution No. 18 at that rate over that period of time so far as you're concerned?

A. She's being given 80 ml an hour -- you could change it, because it's fifth-normal saline, she's getting 60 to 70 ml an hour of free water to dilute down the sodium in her body, in her bloodstream.

Q. From your point of view, how significant is that for Raychel?

A. From my point of view, I think it is the time when things perhaps began to go awry.

THE CHAIRMAN: Presumably, it becomes increasingly significant the longer it goes on?

A. Yes.

THE CHAIRMAN: A couple of hours --

A. For a couple of hours, I don't think it would have mattered.

MS ANYADIKE-DANES: Just before I come to the ward round, maybe there's a small aspect I can deal with at this stage, because you mentioned it, which is when she had her electrolytes tested prior to surgery -- when do you think she should next have had them tested in the normal course of events?

A. If she'd been reviewed on the surgical ward round the following morning and the staff had said, "Right, you've got over your appendix operation, you are free to drink fluids as you see fit", and induced her, we'll stop giving them to you, then she needn't have had them checked.

If, as it turns out, she continued on intravenous fluid therapy, at the very least, she should have had them done at some point during the day.

Q. Do you mean as a matter of routine or as a matter of her particular circumstances?

A. A matter of routine.

Q. So at some point on the Friday she should have had her electrolytes tested?

A. If she was to remain on intravenous fluids throughout the day, she should have had a blood sample taken for that.

THE CHAIRMAN: Sorry, that routine -- that's not quite so clear.

The expected course during the Friday was that, as the day went on, she would sip fluids, the IV fluids would be reduced and then stopped. And had that happened, then there would be no need to check the electrolytes?

A. Yes. In the absence of cause for concern, if she was

continuing to get over her operation, was up and about, as she was in the morning, and was drinking and continued to improve during the day, then --

THE CHAIRMAN: So as the day went on, there were a couple of small sips, very little, the fluid continued at the same rate, which you say is excessive --

A. Yes.

THE CHAIRMAN: -- the type of fluid, which you say is wrong, and she's repeatedly vomiting --

A. Yes.

THE CHAIRMAN: -- and doesn't respond adequately to the first anti-emetic? As I understand your evidence, you're not saying that necessarily the bloods should have been taken at midday rather than 2 pm or 5 pm or 8 pm, but the bloods should certainly have been taken at some point during Friday.

A. The longer she vomited, the more pressing was the need to find out what was going on in the body chemistry.

MS ANYADIKE-DANES: That was actually the point I was coming on to.

Irrespective of the vomiting, is the need to check her electrolytes a factor of the fact that she continues on IV fluids?

A. Yes.

Q. The incidence of vomiting -- and that may produce other

needs to check her electrolytes -- but even if she hadn't been vomiting, if she remained on IV fluids during the day, my understanding of what you're saying is that you would have wanted her electrolytes tested as a matter of routine at some point during the day.

A. Yes.

MS ANYADIKE-DANES: Thank you. I was going to go on to the ward round and I wondered if this might be a convenient moment for the stenographer.

THE CHAIRMAN: Mr Stitt?

MR STITT: Try not to look so disappointed, Mr Chairman! I believe that some of my predecessors rose more often than I do.

THE CHAIRMAN: One of our absent English colleagues.

MR STITT: I couldn't possibly comment.

May I make two brief points and seek some indulgence here?

THE CHAIRMAN: Of course.

MR STITT: Firstly, it is to do with this last point and then I will come back to an earlier point and I shall be brief.

The last question was: irrespective of vomiting, the fluid regime would have required an electrolyte investigation. Could the witness perhaps be reminded of the evidence of Mr Scott-Jupp on 20 March, which was day

94, and if I -- I don't need to bring it up. May I read the one sentence and the witness can maybe comment:

"Many, many, many children would have been given exactly the same fluid regime and not developed hyponatraemia and cerebral oedema."

I understood his evidence to be that he wasn't so much criticising the amount of the fluid, but the specific idiosyncratic reaction which occurred.

MS ANYADIKE-DANES: Actually, Mr Chairman, I'm going to deal with that point as a separate matter. This is simply a matter of what he would suggest was appropriate for testing Raychel's electrolytes. I am going to deal with SIADH and the incidence and the likely knowledge of that in 2001 and the cerebral oedema, but I don't particularly want to deal with it at this stage, if you'll forgive me.

MR STITT: That's entirely reasonable.

THE CHAIRMAN: Let me put up my red flag now about your suggestion that this was a specific idiosyncratic reaction because I don't understand that that's the gist of what Dr Haynes or the other experts are saying to the inquiry at all, but that can be developed.

The fact that other children survive or might have already survived an inappropriate fluid regime does not mean that there is an idiosyncratic reaction on

Raychel's part.
MR STITT: No. What I'm saying is this: the criticism here from this witness is of the amount 80 ml per hour of Solution No. 18. One of the issues in the case is going to be what were the ingredients or what was the culprit which led to Raychel's death. There are a number of specific areas which will be investigated and have been investigated. One is the amount of the fluid, the other is SIADH, another will be Raychel's urinary output and her vomiting and her general nursing and medical care.
These are all hugely important and I'm not saying for one second that any is more important than the other, but I wanted to put into the balance what Mr Scott-Jupp was saying in relation to the amount of fluid as merely one of the suspects in this.
THE CHAIRMAN: Sorry, I don't think Mr Scott-Jupp broke it up like that. With all of the experts I've heard from, including Dr Haynes in writing, you're talking about a combination of things: there's too much fluid; it's the wrong fluid; there's repeated vomiting, the significance of which isn't recognised; there's a failure to recognise the risk of SIADH; there's a failure to make observations; there's a failure to involve doctors of sufficient seniority; and/or there's a failure of the doctors who are junior, who at that

stage of their careers would have limited knowledge and limited experience, on their part to say, "Something's not quite right here, I'm going to go to somebody more senior". So it's not just the type of fluid and it's not just the rate of fluid.
I have to say, Mr Stitt, I don't understand Mr Scott-Jupp to have made the point that you have taken out. I don't think it lends itself to the interpretation that you're putting forward. But if we're going to come back to that issue after the break, we'll do that.
MR STITT: Ultimately, you will make a decision and you will be deciding what led to Raychel's death. There are many factors and I'm just putting the focus on one particular factor. I'm very much alive to all the other factors, all of which are highly relevant.
My second point is brief. Could page 37 [draft] of this morning's transcript be put up on the screen? May I just read this in that case, starting from line 6:
"The main point, I think I'm coming to, is that if a litre bag of fluid was connected directly to Raychel -- or any child -- without a measuring device in the circuit, so to speak, that suggests that the operating theatre environment wasn't geared up to dealing with children regularly because if you walk into

any operating theatre that deals with children regularly, the nurses will prepare the appropriate equipment; you don't have to ask for it as an anaesthetist."
And there was an obvious direct criticism of Altnagelvin's experience in dealing with paediatrics. If I may, could I ask a witness statement be pulled up, so that this witness can have the opportunity to comment? It is WS050/1, page 2. That is the statement of Nurse McGrath. If the bottom larger paragraph can be highlighted. The sentence I wish to highlight is:
"At this stage, one litre of Hartmann's solution was attached to the Venflon in the right arm via a paediatric giving set and the infusion commenced. The paediatric giving set has two chambers, one of which can hold increments of 100 ml so as the anaesthetist can calculate the amount of fluid given."
The point is, was the witness aware of that?
A. Thank you for highlighting it. That answers my query about whether the operating theatre was --
THE CHAIRMAN: Properly set up?
A. And this shows that it was.
THE CHAIRMAN: Thank you. We'll break until about a quarter past.
(12.07 pm)

(A short break)
(12.15 pm)
(Delay in proceedings)
(12.27 pm)
THE CHAIRMAN: Ladies and gentlemen, I think there have been some discussions. We're not going to stop for lunch today. We'll push on with Dr Haynes' evidence. If we need to, we'll take another break of 10 or 15 minutes before it finishes so that we get today's session finished on time. We won't rush Dr Haynes in his evidence, but it means everyone might get on the road home a bit quicker.
MS ANYADIKE-DANES: I've been asked to cover a couple of things with you that come out of the surgery, if I can put it that way. The first relates to Raychel being slow to waken. That was sufficiently noteworthy that Dr Gund made a note of it. Do you regard him making a note of it that she was slow to waken, as a matter of his experience, he would have expected her in those circumstances to have woken sooner than she did, or do you look at it more, well, he's just recording as a matter of fact she took a long time to wake, which might be something to do with the anaesthetics that have been administered to her? Can you help with the comment at all and how you interpret it?

A. Yes. If you look at -- first of all, I don't think there's an issue here, but I'll go over the details.

Raychel came in to Altnagelvin at teatime, she was given some cyclizine and morphine in the A&E department. I think she got 2.5 mg of morphine at that point. Then she went to the operating theatre round about midnight. She received a total of 100 micrograms of a fentanyl, which is a synthetic morphine-like drug, plus 5 milligrams of morphine in the form of Cyclimorph. So she had a reasonable cumulative dose of opiate drugs over the course of the evening and night, which I don't think is an issue for discussion. But it does mean that in a child who's been given a significant dose -- not excessive, in my view -- of opiate drugs, she may well have been drowsy and slow to wake up after the operation.

If I could put it a different way: if she had been operated on in the morning and the same delay had occurred, I suspect there may not have been any concern or even any note made of it, and I wouldn't read too much into it and I'm perfectly happy that the drugs given were appropriate.

Q. Thank you very much. The other thing to ask you is whether, in any of the medication that she was given, whether any of that could have affected her urination.

A. The only side effect of morphine and opiate drugs is that there is a tendency to urinary retention, loss of desire to empty one's bladder. That's the only --

Q. I beg your pardon, did you say there's a tendency to urinary retention?

A. Yes. One of the side effects is that, although urine may be produced, the urge to empty the bladder is suppressed and urinary retention is quite common following significant doses of morphine and opiates.

THE CHAIRMAN: How significant was this dose of morphine?

A. It may have been enough for her not to have voided urine because she hadn't noticed a full bladder.

THE CHAIRMAN: For?

A. Several hours.

THE CHAIRMAN: Several hours from the administration preoperatively?

A. Yes. Well, the cumulative administration over both what she received in the Accident & Emergency department and in the operating theatre.

THE CHAIRMAN: She arrived in the hospital on Thursday evening; in terms of what happened on Friday would that have had any continuing effect?

A. She may well have not passed urine until the following morning because of the side effect of the opiates given.

THE CHAIRMAN: Right. As Friday morning arrived and then we

go on through Friday morning into the afternoon and evening, would the administration of the morphine on Thursday evening have any continuing effect on her not passing urine?

A. No, it'd be gone by then.

THE CHAIRMAN: Thank you.

MS ANYADIKE-DANES: So if it's perhaps having a lingering effect on, say, Friday morning, in combination with the ADH, if you like, could those two factors have combined to restrict her urine output?

A. One has to separate the production of urine by the kidneys from the voiding of urine from the bladder. The morphine and fentanyl -- she may well have produced urine, but not had the urge to empty her bladder.

Q. So it would just have stayed there, she would just have had a very full bladder?

A. Yes, and not been particularly bothered by it.

So you're looking at two separate processes: one is the ADH which affects the production of urine by the kidneys; and the other is the relatively trivial side effect of urinary retention caused by opiates.

Q. Does it mean that it would have had an effect, say, some time into the morning of the Friday? Would that have affected or not anybody who might have been closely observing her to see what was happening

post-operatively?

A. Yes. I mean, urinary catheterisation is talked about by various people in the course of this case. The reason to catheterise a patient's bladder who hasn't had urological surgery is to look at the actual urine production by the kidneys to distinguish it from urine that is produced, but retained, so that adequate monitoring of fluid balance and kidney blood flow and suchlike can be made. In Raychel's case, I'm absolutely certain there's no indication whatsoever on the Friday morning to even think about catheterising her bladder.

Q. Right. And I take it, if she hadn't passed urine until about 10 o'clock due to whatever effect, possibly the effect of her morphine medication, that in and of itself wouldn't have been a concern?

A. No. By this point of time, she had been out of bed, talking, walking. There wasn't any real major concern for her general condition at that point in time.

Q. Thank you. And if we move a little bit before that and start with the ward round, which is the time when you think is the opportunity to review her fluid regime and indeed plan her fluid regime for certainly that day. When you have said, as far as you were concerned, there wouldn't have been any concern about her at 10 o'clock even if she hadn't passed urine by then or had only just

passed urine first by then, do I take it from that that you wouldn't have seen any concern about her physical state at the ward round, which is about 8/8.30?
A. No. The description from the various witness statements is of a girl who was relatively well, without major complications, was conversing with her family and those around her, was well enough to get out of bed and walk to the bathroom. There were no specific examination findings noted in her case notes, but the description from those who have made statements to the inquiry suggest that she was relatively well at that point in time. Well enough to talk, well enough to communicate, well enough to walk around. It would be, to my mind, very unlikely that there'd be any issue at that point in time about fluid overload or lack of urine production.
Q. Yes. Can I ask you this and tell me if it's straying outside your area of expertise? An issue that came up yesterday that had concerned Mr Foster both in his evidence yesterday -- and he referred to it in one of his reports -- was that when they tested Raychel's urine before surgery, there was protein in it, plus 1 at the first test, and plus 2 later on, just before midnight. And his view was he would have liked somebody to explore that a little and find out why she had protein in her urine. Is that the sort of thing that you would expect

would be looked at at the ward round or can you not help with us that?
A. I could comment that it would be the kind of thing that should be tidied up at the ward round, but I would defer to surgical expertise on that.
Q. I understand.
Then before the break, you were saying one of the things you thought would happen at the ward round is that whoever was conducting it would look at her charts and I think you said look at the prescription for her fluids. You were doing that by way of answering another question. I wonder if you could help by saying what exactly, from an anaesthetist's point of view, you would have expected to happen at that ward round, given that this is now the first clinician who's actually looked at the issue of what fluids she ought to be on post surgery?
A. The components of a surgical ward round of this kind would be that a member of the medical team would physically examine the patient. Typically, after having an appendix out, one of the surgeons may listen to see if there are bowel sounds, signs of returned bowel activity, look at her observation charts, pulse, temperature, blood pressure. Look at the drug prescription chart -- or "kardex" as it's colloquially

known -- look at her fluids, look at any blood tests that may or may not be available, and ensure that the appropriate detail is completed for the next period of time, typically 12 or maybe 24 hours.
Q. Are you saying that you would expect a ward round to deal with all of that even in the presence of a little girl who seems perfectly well after a fairly straightforward appendicectomy when the appendix doesn't seem to have been problematic and, if anything, was only mildly inflamed? Are you saying that that is necessarily something that you would expect to have happened?
A. Yes, it would only take five minutes.
Q. If I put to you Mr Zafar's evidence, his view was that she did appear well, she was up, her father seemed happy with her condition, she spoke to him, he examined her briefly. There were bowel sounds, as I understand it, and she was sufficiently well that his plan for her was that they should introduce fluids orally and that she should be off fluids. In fact, his view was that she might be off fluids as soon as lunchtime and that she would thereafter be on a light diet with a view to being discharged the next day. That was how her presentation at about 8.30 suggested her development over the day. And because he had formed the view that he was going to

stop or her fluids would stop, he didn't think it was relevant to look at what she was literally on at that time. Could you comment on that?
THE CHAIRMAN: With all due respect to Dr Haynes, the surgeons gave evidence yesterday, Mr Orr and Mr Foster, about what Mr Zafar should have done on the ward round. They both agreed it wasn't acceptable for Mr Zafar not to have looked at Raychel's fluid regime as part of the ward round and that's the expert advice I'm taking. So I'm not sure we need to go over this point again with Dr Haynes as the expert anaesthetist.
MS ANYADIKE-DANES: Very well, Mr Chairman.
Then from an anaesthetic point of view, what do you think is the fluid regime that she should have been on if those charts had been looked at and so forth? As I think the expert surgeons said should have happened, she should have had a review. If that had happened what, from an anaesthetic point of view, is the regime that you think Raychel should have gone onto?
A. The fluid should have been an isotonic fluid such as Hartmann's. The volume given would depend on how much she was able to take orally and it would be governed by that. If she was unable to drink, then she would still need a reasonable prescription. If she was beginning to drink, it would be perfectly reasonable to stop the

fluids completely at some point.
Q. You say Hartmann's because you think that's a preferable fluid?
A. Yes.
Q. If the ward practice is not Hartmann's, but Solution No. 18 -- and I understand that that is not a unique ward practice, that there are many paediatric wards in which Solution No. 18 would have been used in 2001 -- so if that's the practice, then what do you say the regime should have been that would have made such a practice appropriate for Raychel?
A. I have a problem with the question in that I believe that, in 2001, there was enough published evidence disseminated well enough for 0.18 per cent sodium chloride to be no longer used. So I find it quite hard to answer that question.
Q. Let me put it this way. Are you saying that Solution No. 18, maybe not maybe universally used on paediatric wards, but was certainly commonly used on paediatric wards in 2001?
A. It may still have been commonly used and that was obviously still commonly used, uniquely used, in Altnagelvin Hospital.
Q. Assuming that that's the case --
THE CHAIRMAN: And regularly used across a number of

hospitals in Northern Ireland.
A. Yes.
THE CHAIRMAN: During your training, as you were working your way up the ladder, doctor, can I take it Solution No. 18 had been a fluid which was used regularly at one point in your early career?
A. It was never used in paediatrics in any of the Glasgow hospitals I worked in.
THE CHAIRMAN: And you've been working in Glasgow from --
A. I worked in Glasgow or the Glasgow area from the mid-1980s until 1992.
THE CHAIRMAN: Thank you.
MS ANYADIKE-DANES: Well, recognising that, if the prescribing surgeon for whatever reason felt that he had to prescribe in accordance with the ward practice, which was Solution No. 18, what in your view does one do in those circumstances to ensure that Raychel's fluid needs are adequately addressed?
A. If there is no option other than to prescribe fifth-normal saline, then it would have been appropriate for her to have been given it at a rate less than calculated by the Holliday-Segar formula.
Also bearing in mind that she may start to drink, it would be reasonable and sensible to continue perhaps at 60 per cent of the calculated rate on the

Holliday-Segar formula for review later in the day should the situation change.
Q. And does that mean, therefore, that a decision should have been made at that stage about what she should be on, from your point of view as an anaesthetist, irrespective of how long that was going to be, one hoped it wouldn't be very long, but a decision should have been made about her fluids?
A. Yes.
Q. And if you're putting her on a fluid that you as an anaesthetist don't think is your best choice, if I can put it that way, but that's the ward practice, and you've reduced the rate to effectively accommodate the fact that she's getting low-sodium fluids, is there anything else that gets done to ensure that matters progress safely, if I can put it that way?
A. I would expect that somebody should have reviewed her during the day. Typically, a member of the nursing staff might come to a member of the junior medical staff and say, "Can we stop giving her fluids, can we take her drip down?", if it was obvious she was beginning to eat and drink. If she required to remain on intravenous fluids, regardless of events that subsequently unfolded during the afternoon and evening, then she should have had a blood sample taken at some point during the day to

look at the electrolyte content of her blood.
Q. And then if we now introduce the factor of vomiting, her first recorded vomit is at 8 o'clock and it may not have been precisely at 8o'clock, but it's some time early in the morning it would appear. Then she has a vomit at 10 o'clock, described as a large vomit, and she goes on during the day -- maybe if I just pull up this reference chart so we have it for going back to. 312-001-001.
What I want to ask you about is: she remains on the Solution No. 18 and she starts to vomit. What in your view was known in 2001 about the replacement of gastric losses if you've got a child on IV fluids?
A. That you should replace them at equivalent quantities -- you can estimate -- with normal saline, typically, but certainly an isotonic solution.
Q. Mr Gilliland in his evidence touched on this and he said on 14 March, page 109, that it was usual to replace gastric losses with Solution No. 18. Thinking back into 2001, can you comment on that?
A. It was known to be wrong in 2001.
Q. Well, generally known to be wrong?
A. Yes.
Q. Sufficient so that if you had been in a children's ward where that was happening, you would have been surprised at that?

A. Yes.
Q. And when you said "generally known" and you'd be surprised, is that knowledge that you think would be confined only to clinicians or in your experience did nurses appreciate that, working on paediatric wards, I mean?
A. General paediatric wards, I think it would be going beyond the remit of the nurse to know that. But I think junior and senior medical staff should know that from medical school days.
Q. When you say "junior", do you include in that JHOs?
A. Yes.
Q. Is that a knowledge that you would expect them to have from their training on the ward or is it a knowledge that you would have expected them to come to the hospital with out of their university training?
A. Both. It would have been explained during the course of university training, but certainly during the course of a pre-registration surgical house job where you're looking after patients who have conditions that involve loss of fluid, it's almost second nature.
Q. Dr Scott-Jupp says something similar. He says at 222-005-005 that:
"The practice of replacing gastric losses millilitre for millilitre with normal saline rather than hypotonic

solutions was well-established well before 2001, at least in children, and it's mentioned in standard textbooks used widely at the time."
Then in the references to his report, he does actually identify some textbooks, which I'm not going to go to. Would you agree with that?
A. 100 per cent.
Q. Some of the witnesses, including the surgical JHOs, said that they believed that Solution No. 18 would address both water and electrolyte loss; do you accept that that's possible or would?
A. No, it's not possible.
THE CHAIRMAN: Can't?
A. Can't.
THE CHAIRMAN: Okay.
MS ANYADIKE-DANES: And I think they thought that would certainly happen if the urinary system hadn't been compromised in some way. So even if it's not an appropriate fluid, can, in some way, the body accommodate it?
A. It can accommodate it and distribute the water throughout the tissues, but it will dilute down the blood. It's just such a fallacy; it's wrong.
Q. Right. So although the body could accommodate it, the longer that goes on for, the more serious a problem, if

I can put it that way, it becomes?
A. Yes, because in effect by giving dilute sodium chloride, you're giving free water -- because the sugar component is rapidly metabolised -- and if the kidneys are regulated hormonally to retain water, the body is not in a position to deal with the extra load of free water it has been given.
Q. Then I wonder if I can ask you, before we go on to what happened over the day and talk about the system of care and responsibility for post-operative care -- I beg your pardon.
Sorry, can we bring up the transcript for 6 March at page 42, which is Dr Devlin's evidence? Starting at line 7. The question is:
"Question: You would also bring into the mix drugs to try to stop the vomiting?
"Answer: That's right.
"Question: Could you illustrate for us how that plan would work in terms of restoring the correct electrolyte balance?"
And you see there his answer and that's the thing I would like you to comment on:
"I think the concern in most health rely children with gastroenteritis would be one more of dehydration rather than hyponatraemia. So the use of a hypotonic

solution seemed to work well for the vast majority of children because there was some sodium -- there was still 30 millimoles of sodium in the No. 18 Solution -- and over time, as the vomiting or diarrhoea stopped naturally or due to the use of medications, the child's own kidneys would kick in and would filter out excess fluid and retain the sodium. I think that was the rationale at the time.
"In the vast majority of children that seemed to be exactly what would happened. After three or four days -- two or three days with gastroenteritis on No. 18 Solution, the vomiting and diarrhoea would stop, their electrolyte profile would normalise and the concern would have been more dehydration than of hyponatraemia."
Can you comment on that?
A. That may well be true, but it is not as safe a way of doing it as you would if you used a more concentrated sodium-replacement solution. In his words, he says, "the electrolyte profile would normalise". Implicit in that is the fact that it was abnormal in the three or four days of the illness.
Q. And so if I move on to where I was just going to move on -- and this is a nice link to it -- is it the inappropriate ADH, as one factor, that stops the normalisation of the electrolyte profile over time?

What is the factor that stops that process as Dr Devlin describes it there?
A. Yes, the inappropriate ADH that is generated by the surgical stimulus, the trauma of surgery, the anxiety of the operation is telling the kidneys to retain water and to lose sodium inappropriately. So if you give dilute sodium chloride and you have a situation where there is an excess of antidiuretic hormone in the body, it is going to be harder for the body to regulate its electrolyte concentration profile and normalise the blood chemistry.
Q. So that would certainly be a factor that would affect this particular mechanism working in the way that is described here. But even if you don't have the SIADH, is it not relevant to this description the volume or the rate of that low-sodium fluid that you're applying? Maybe it's the volume.
A. Sorry, I lost your thread.
Q. What Dr Devlin has described here is a way that the body could accommodate this. It is getting low-sodium fluid, lower sodium than would normally be present in the gastric losses or the losses through diarrhoea. It is getting that, but as the person stops vomiting or stops having diarrhoea, then the kidneys will work to excrete that as urine. So over time the body would sort of

regulate itself, even though at some point it had too much low-sodium fluid in it, if I can put it that way. What I'm asking you is: does it not make a difference if you apply quite a lot of low-sodium fluid so can you get to a point where there's too much really for that natural mechanism to work itself out?
A. Yes. The example Dr Devlin's given of gastroenteritis where a child ends up being dehydrated means that the body is actually short -- but there's not enough water in the cells as well. For a child or anyone to need intravenous fluids because they've got gastroenteritis, the illness must have gone on long enough for them to lose water from all the compartments of the body -- that's in the cells, in the blood, and in the tissue spaces. So if the patient is dry, if you like, intracellularly, a lot of the excess water is going to move into the cells to produce a more normal intracellular environment.
Q. Well, they have stopped being so dry, but they still have too little sodium in.
A. Yes, but the sodium stays outside the cells, the water moves in. So the level or the concentration of sodium in blood is not going to be changed as dramatically as if you start with a child like Raychel who's normally hydrated.

Q. Even so, if you apply the low-sodium fluid at a relatively high rate -- and by "high" I mean in excess of maintenance needs -- and you do it for a relatively lengthy period of time, do you not get to a situation where the body just can't deal with that?
A. Yes. And the longer you go on, the harder it is for the body to deal with it.
Q. And I think you were saying that that particular position is compounded if the patient is adequately hydrated at the start, which is how you interpret Raychel?
A. Yes.
Q. So she's got no slack that can be accommodated with this extra excess fluid?
A. There's nowhere for the water to go.
Q. Yes. So do I take it then that this description of how things might work is not one that would be appropriate for a child in Raychel's condition?
A. Yes, I think that's right. We're using this example, if you excuse the analogy, we're kind of comparing apples and pears a bit. It's not quite the same situation.
Q. Even so, just so that we have it clearly, albeit not being very good for her and making her ill, could Raychel's body have coped with it, but for the SIADH in your view?

A. It is my view that if she didn't have inappropriate ADH secretion, she would have had a much better chance of coping with it, and many children would have coped with it.
Q. So if we had the vomiting, the post-operative type of vomiting, if you'd that, you had the above-maintenance level administration of low-sodium fluid, none of that would have been very good for her, but in your view she might have coped with that? Is that what you're saying?
A. You asked me to comment if she vomited as she did and she received the fluid as she did?
Q. Yes.
A. She might have coped with it, but the fact that it was fifth-normal saline, a hypotonic fluid, made it more difficult for her to cope with it and many children may have coped with it and the literature shows that many will cope with it, and people have said to this inquiry that many, many children have had hypotonic fluids and coped with it. But Raychel was one of the unfortunate few who didn't cope with it.
Q. Yes, and that's what I'm really trying to tease out from your experience. Is the distinguishing feature for Raychel the fact that, for some reason, she had an inappropriate antidiuretic response?
A. Yes. She had a more extreme antidiuretic or the

information put in front of me leads me to conclude that she had a more extreme syndrome of antidiuretic hormone production in response to the surgical stress and trauma than many of the population would have done.

Q. And could you express a view as to why she might have?

A. Well, she would have had the same stimulus as many, many children would have had. She had the anxiety and stress of coming to hospital, she would have had the trauma of surgery -- because it's the same metabolic and endocrine response to trauma whether it's an injury or whether it's surgery -- but if you look at any given population, some will have minimal response, most will have a response that's about average, but there'll always be a small percentage who have an extreme response. So there's a normal distribution of response. And if the stimulus wasn't any different, the factors weren't different to many other children, but she was one of the extreme responders who produce a very significant antidiuretic hormone response to the surgical stimulus and process and was unable to cope with the added complexity, if you like, of further hypotonic fluids and, once the vomiting started, one presumes that the hyponatraemia began to set in and trigger more vomiting, and it would have been a vicious circle.

THE CHAIRMAN: Doctor, can I ask you, how speculative

is that last piece of evidence you've been giving about Raychel having a more extreme SIADH than other children?

A. It's not speculative in that there is a normal distribution of response. If you take 100 individuals, 97 per cent will lie within two standard deviations either side of the mean, but there'll be 2.5 per cent who will produce an exaggerated response and 2.5 per cent at the other end who will produce a minimal response. It's just human nature that there's not an uniform response in every individual to the same stimulus.

MS ANYADIKE-DANES: When you describe it like that, does that mean, in 2001, people would have recognised that there are these different responses and at the one end of the spectrum can be a very extreme response?

A. Yes.

Q. In 2001 people have known that?

A. Yes.

Q. Is that because there's published literature on it or --

A. Yes, if I can refer you -- I've got the page marked this time. So Arieff's paper, which has been discussed in this inquiry quite a lot. 220-002-201. If you look at the summary, the abstract, and look at the results paragraph on the bottom of the left-hand column of text, Allen Arieff looked back to try and identify the

frequency with which hyponatraemia led to death or brain damage in children following surgery.

He looked back and he worked in a place and they managed to identify 24,500 children who'd undergone surgery. The incidence of post-operative hyponatraemia was 0.34 per cent, so it is recognised and rare but not vanishingly rare. And of those 83 cases in that huge series, the mortality of those affected was 8.4 per cent. So seven of his series died because of it. So he has identified that there's a small minority, but not a vanishingly small majority, of the normal population who are susceptible to this, and this was at a time when it was very much the norm to use hypotonic fluids as maintenance fluids following surgery. This was published in 1992.

Q. Yes. When I asked you that, whether there was any published literature that would have informed people of that and you said yes and you cite this paper, we've asked all the clinicians really whether they were aware of this paper and none of them were aware of the paper. They gave a number of reasons for that, but some of it being, in a busy practice, you just have limited amount of time to look through the journals unless there's a specific thing that you're looking for and you're targeted towards that.

And although this was published in the BMJ, it's one article in the BMJ in 1992, Raychel's case came before them in June 2001. So what I'm really dealing with is: leaving aside Arieff's paper which has been important for this inquiry, on what basis do you say that people should have appreciated that factor about SIADH in 2001?

A. If you look at the standard textbooks published before Raychel's operation, it's quoted -- and one of my references -- and I'm not going to rummage through the papers just now -- but in the text of the Textbook of Paediatric Anaesthesia that I gave as a reference edited by Cote & Todres -- this is published in the early 90s, I think -- it is really quite clearly laid out that there is a danger when you give hypotonic solutions to children. In post-operative children, there's a danger of generating hyponatraemia, which can be lethal. So it is drawn to attention --

Q. Yes, but Dr Haynes, that might be a slightly different thing that the danger of generating hyponatraemia might just be a factor of overdiluting the sodium in the body because, as a matter of fact, that's one of the definitions of hyponatraemia. This is different. What I was asking about is a mechanism in the body, a normal mechanism in the body, which is applied to excess in

a small number of patients and that mechanism has the effect of retaining fluid, which therefore contributes to the diluting factor. And that was the bit that I was asking you about. How widespread was the knowledge that you could have that excessive reaction of the antidiuretic hormone to be so extreme that the water retention was so significant that, if combined with the administration of low-sodium fluids, you could reach a stage of significant hyponatraemia? That was the particular mechanism that I was asking you about. So I understand what you say about the knowledge of hyponatraemia, but can you help me with the SIADH point?

A. In terms of the general appreciation --

Q. Yes.

A. -- in the medical fraternity? In my experience, throughout my working life, it has been widely accepted that this is a potential problem and that hypotonic fluids are potentially dangerous and should be used with care, right from the time I graduated.

Q. And that's because they can combine in a post-surgical situation with an excessive antidiuretic hormone response?

A. Yes.

Q. And that element --

THE CHAIRMAN: Sorry. Not even necessarily with an

excessive --

A. Yes.

THE CHAIRMAN: They can combine with any ADH --

A. Yes.

THE CHAIRMAN: -- and the more extreme the ADH is [OVERSPEAKING] --

A. -- like happened to Raychel.

THE CHAIRMAN: Even if it's not extreme, you can have some effect on the sodium level and you can induce hyponatraemia even if it's not fatal and does not cause brain damage.

A. Yes.

MS ANYADIKE-DANES: Thank you very much. That's an important point that you've just dealt with there. So even if she hadn't had SIADH, but had just had what you say is the normal ADH response to trauma, in this case surgery, that would have been enough for her sodium levels combined with the administration of too much, if I can put it that way, low-sodium fluid to have made her ill?

A. Yes.

Q. And that there was a knowledge of that and that obviously is what they should have been trying to avoid. So leaving aside the possibility of it could have been fatal, it could have made her ill, so you'd be wanting

to avoid it from that point of view?

A. Yes.

Q. Thank you.

THE CHAIRMAN: One of the unknowns, doctor, is just how many children do die of hyponatraemia. Because in this inquiry we have stumbled over two of them by accident. We know about Adam's death, that you were advised in, and we know about Raychel's death because Altnagelvin recognised the mistakes that had been made and that was referred to a coroner. It was only as a result of Raychel's death being referred to the coroner that Lucy's death the year before in Fermanagh turned from being a death attributed to gastroenteritis to being a death attributed to hyponatraemia, so it was entirely missed. Right?

A. Yes.

THE CHAIRMAN: And then when those three deaths were the subject of a local television documentary, Claire Roberts' death emerged as a case where hyponatraemia had not been identified on the death certificate, to try to put it neutrally. And that led to her case being re-opened and hyponatraemia being recognised as one of the causes death. So out of the four deaths that we are primarily concerned with at the inquiry, two were completely missed.

A. Yes.

THE CHAIRMAN: That does not lead me to be relaxed about the notion that these just happened to be four hyponatraemia deaths and those are the only four because we can't possibly know how many other deaths were missed in Northern Ireland and I have little reason to think that this is unique to Northern Ireland. Does that make sense?

A. That makes a lot of sense. If I may make a general comment?

THE CHAIRMAN: Please.

A. I think the knowledge of electrolyte management has gone from a stage where, at the beginning of my medical career in the 1980s, it was something that some people placed a lot of emphasis on and it's now reached a stage where there's been so much literature and so much concern about it and patient safety alerts have been put out that it's much more emphasised, particularly by the work of people like Professor Bohn, who go around the world speaking about things like this and drawing attention to it, who are, if you like, evangelical about it, that knowledge and awareness is increasing in the medical community.

THE CHAIRMAN: So you would hope that with greater awareness, there should be fewer sure deaths or injuries

as a result of hyponatraemia as the 1990s went on and as this millennium has progressed? So if there's an unrecognised number of hyponatraemia deaths, one would hope that there are more in the 1990s and earlier.
A. I'm sure there are and what won't be recorded is the number of children who became -- patients of any age who became seriously ill, not dissimilar to Raychel, but who were treated and survived.
THE CHAIRMAN: Yes.
A. And I think it's no coincidence that, as we speak, the National Institute for Clinical Excellence is bringing together a group to develop guidelines on fluid replacement therapy in children. And I think that's the culmination of the increased awareness that's developed over the last 10 or 15 years.
THE CHAIRMAN: Thank you.
MR STITT: I don't know if it would be appropriate for someone to ask the witness, but in the Arieff paper which was referred to a few minutes ago, there was a San Francisco sample of a 24,400 post-operative patients of whom 83 developed hyponatraemia and seven had a fatal result.
THE CHAIRMAN: Yes.
MR STITT: And I wonder if the witness can comment as to how -- 24,000 may seem like a large number, I'm dealing

with your point, chairman, but throughout the UK or Northern Ireland, if we've got -- if there have been --
THE CHAIRMAN: How many surgical admissions might there be a year?
MR STITT: Yes. Just to put that in perspective with the UK.
A. I couldn't give you exact numbers, but it's not that big a number. I would speculate it would be between 5 and 10 years' worth of paediatric operating in the hospital he worked in.
THE CHAIRMAN: Thank you.
MR STITT: In the hospitals in which --
A. In which he worked in.
MR STITT: That was just in the San Francisco area --
A. Yes.
MR STITT: -- according to the blurb.
A. It sounds a lot, but it's not really.
MR STITT: That's the point I was actually trying to make.
MS ANYADIKE-DANES: In fact, I think Allen Arieff deals with that in his paper. If you go to page 203 on the epidemiological findings, he deals with the likely incidence. And you can see that he's effectively predicting almost 30 hyponatraemic deaths per 100,000 paediatric operation cases as I read it.
THE CHAIRMAN: Thank you.

MS ANYADIKE-DANES: The question I had originally asked you about the SIADH was whether anybody knew why it happened. You answered it by indicating the incidence of it, that it's at the extreme end of a spectrum to react in that way and that there aren't perhaps that many at the extreme end of the spectrum, but they are a non-trivial percentage at that extreme end. Having described the numbers, does anybody know why any given child reacts in that way? Would anybody be able to know why Raychel reacted in that way?
A. No, it's impossible to predict on individual patient basis. When it comes to understanding risk in general, if you look -- Allen Arieff can say, "We have 24,000 children, this will be the number, if they're treated this way, who will have hyponatraemia". If you look at, for example, 1,000 patients getting a specific kind of or a defined kind of surgical procedure, you know that of those 1,000, the law of averages says two will die or two will have a particular complication, but you can't say which two.
THE CHAIRMAN: Okay.
MS ANYADIKE-DANES: Right. So that's how SIADH is like that?
A. Yes.
Q. You know that children are at risk or people, but in

this case paediatric cases -- children are at risk from it, but you can't point beforehand to the triggers that will indicate this child is more likely to be at risk than any other?
A. No.
Q. Not at the moment?
A. No, because you could take all the people in this room and you know that the law of averages would say that one of us would have complication X from something, but you couldn't say at the start which one it would be.
Q. So then you treat them all in a conservative way --
A. To try and prevent it happening.
Q. Exactly. And that comes back to what you were helping me with in relation to vomiting. If we could put 312-001-001 back up. The experts and clinicians have all, to varying degrees, discussed post-operative vomiting and the incidence of it. Do you yourself have experience of addressing or being asked to deal with post-operative vomiting?
A. Yes, almost weekly, daily. Regularly.
Q. In the course of your report, you did talk about what the expectation was in terms of when it might start, how long it might go on for, if we're talking typically, although I understand there's a range of response in the way that you've described for the ADH. In your first

report at 220-002-012, you say that:

"It usually settles within the first six hours, but it's not infrequently troublesome for up to 24 hours."

Do I understand you to be saying that that post-operative vomiting is something that's related to the anaesthetic and also the handling, if I can put it that way, that goes on in terms of the appendicectomy that might have gone on in the course of her surgery?

A. Yes.

Q. Can you help us with, from your point of view, whether it was to be expected that the first vomit that Raychel had might not have come until 8 o'clock even though her surgery finished some time around about 2 o'clock?

A. Yes, that's not unreasonable. It's very common that children have an operation, aren't troubled, and then the following morning they get up and the first thing they do is vomit and then that's the end of it.

Q. When you say "get up", is that part of the process of getting up, that has that effect?

A. No, it's not part of -- it's not due to the physical getting up; it seems to go hand-in-hand with the initial kind of recovery, the first step of getting out of bed and moving.

Q. Right. So that wouldn't necessarily have surprised you if you'd been contacted and told she'd had a vomit at

about 8 o'clock?

A. I would have been surprised if anyone had contacted me to say she had vomited.

Q. I didn't mean it from that point of view. In terms of knowing that she had vomited, would that surprise you?

A. It would be entirely -- no.

Q. Then you say, a little later on in your report, at 018:

"It is unusual for it to last beyond 6 hours following the end of surgery."

I'm just trying to fit the timing in:

"Vomiting attributable to anaesthetic drugs is usually evident from shortly after the end of anaesthetic. It's unusual for it to last, just due to that, beyond 6 hours following the end of surgery."

A. Yes. Typically, you'll see, if you walk into the recovery ward in an operating theatre suite in a children's hospital, that is when you will see children who are most troubled by vomiting and it usually gradually settles thereafter.

THE CHAIRMAN: As Mr Orr reminded us yesterday, it's by no means an inevitable result of surgery; there are many children who come through surgery without vomiting at all.

A. Yes.

THE CHAIRMAN: In fact, he said while it wasn't unusual, it

wasn't common.

A. About half children having surgery of one sort or another will vomit. It's commoner in girls and it's commoner round about puberty. And then once you reach adulthood it becomes less common again. It's also less common in young toddlers.

MS ANYADIKE-DANES: Leaving aside other things affecting, that sort of vomiting, if one's looking at this timeline here, it might be a difficult thing to answer, but when do you think you move from that and start thinking maybe something else is happening?

A. Um ... I think later on in the morning, because we have vomit that's marked in yellow at 8 --

Q. Sorry, I should say the vomiting that's marked in yellow are the vomits that are recorded on the fluid balance sheet. The red squares are vomiting that has been referred to in witness statements or in some other document and that's just observed.

A. Yes. One of the difficulties I had in formulating my report was I find it quite hard to count up the number of times Raychel vomited. And in the end I just left it as "numerous". I think I chose seven or eight. But I think when you have the 10 o'clock followed by the 11 o'clock followed by the 12 o'clock, and I think between 12 o'clock and 1600 when there's an arrow which

says "listless", that's the window when things weren't perhaps as they should have been.

Q. Yes.

THE CHAIRMAN: That's actually the point at which the nurses contacted the JHO for the anti-emetic. So that was about mid-afternoon. That's when their concerns were raised. The evidence that has been given to us before is that nobody puts a particular time on when the doctors should have been called or when the blood tests should have been carried out, but certainly as the day went on, and to the extent that there's any common view, it would be through the afternoon the concerns would have been sufficiently great for checks to be done to see --

A. Why.

THE CHAIRMAN: -- yes, to see why, because she was not on the expected recovery path. The amount of fluid she was getting had not changed. It hadn't been reduced in the way that might have been expected. She was vomiting and she wasn't drinking orally.

A. Yes. Part of reasons why this might not have been addressed -- you might want to look at it in a different session -- but as far as I can ascertain, the junior doctors who were primarily responsible for her care were the surgical JHOs, who weren't engaged in regular

paediatric practice. And taking a blood sample from children is not fun for the child and if you don't do it regularly, it's difficult and it's human nature, I guess, to try and avoid it. To me, the question is asked: not just should the blood sample have been taken, but who should have taken it? And I think it's a little ... Or the junior house officers from the surgical team were put in a slightly difficult situation that it might have crossed their minds that maybe they should have done it, but, "It's a child, I've never taken a blood sample from a child before", or, "I've only done it once". And it brings you back to how the hospital was run and who's responsible for all the surgical children in the hospital.

THE CHAIRMAN: Thank you.

MS ANYADIKE-DANES: That bit about the electrolytes is something that did come up in the course of the critical incident review meeting afterwards, which was that -- they identified a distinction between how that was handled in terms of the general medical patients and how it was handled in relation to the surgical patients. Paediatricians were doing that for the general medical patients, but the concern of the nurses was that the surgeons didn't seem to be so proactive in that in relation to the post-operative patients and that was

a concern and that was a matter that was the subject of discussion.

But the way you've put it in terms of whether the junior doctors should have instigated that, in terms of what actually happened with Raychel, in fact you have commented on it in your report as to the fact that she didn't really have the benefit, leaving aside the ward round, of any senior clinical involvement until she'd actually had her seizure. But none of these doctors who interacted with her, if I can put it that way -- Dr Butler or Dr Devlin or Dr Curran, if you see along the bottom line -- were doing so in a planned way in terms of: this is the time we're going to do this or following on from some sort of plan established during the ward round.

Dr Butler, who was a paediatric SHO, she comes because the nurses want another IV fluid bag put up, and she's just asked to do that. Dr Devlin comes because, as the chairman has said, the nurses are a little bit concerned about the vomiting and they would like an anti-emetic to stop it happening as it's uncomfortable for the child. That was their perspective. He attends at 6 o'clock because that's what they want. And Dr Curran comes at 10 o'clock because that anti-emetic hasn't been entirely successful and she's still vomiting

and they want another anti-emetic. So all of that is responsive.

I'm going to ask you in relation to Dr Devlin and Dr Curran about whether you think that, in those circumstances, at that stage, JHOs should have been thinking about bloods or should they simply have been thinking about contacting their senior colleague.

A. I think they should have been contacting a senior colleague because they were obviously functioning outside their comfort zone and the longer the afternoon wore on, the more the need for someone who could take a grasp of the situation to attend becomes apparent as you look at it. And I think that they were put in a difficult situation, but they should have said, "Well, we're not comfortable with what's happening here", and asked for help from someone who was comfortable to help in an appropriate manner.

Q. That's, of course, assuming that they knew the history of what was happening here. But that kind of evidence has already been given by the surgical experts, and dealing with what they would have expected surgical JHOs to have done. But if I can ask you a question from a slightly different point of view and that is: by the time you get to 1 o'clock, that was a time when Mr Orr, I think, said he would have been a little bit concerned.

Leaving aside the observed vomits -- let's just deal with the recorded vomits -- he's saying you have had three recorded vomits, one of them is recorded as a large vomit, he would have been a little bit worried -- and she was still on her Solution No. 18 at 80 ml an hour. As an anaesthetist, you are also concerned with the fluid balance for a child. Would you have been concerned at that stage at 1 o'clock?

A. Yes, I think if I were to put my intensive care hat on, very often in a hospital a child becomes acutely unwell and the intensive care staff are asked to review the child and look after the child. You look back at a child like Raychel, for example, to work out what's happened and what the cause of the problem is and what's been done, and I'm comfortable to say I could look back at this and say, "Why wasn't something done during the afternoon?" She clearly wasn't well, things weren't as expected, somebody who knew how to go about investigating the problem should have been asked to attend.

Q. We've put on here that Raychel appeared to be listless and we've timed that at roughly 4 o'clock in the afternoon. And that information comes from her parents and also others, some who knew her and some who didn't know her, who were just describing her demeanour. But

it's not something that's entirely accepted and the nursing staff have a different view as to her demeanour. But I wanted to ask you in this way, working back, if you like: by 3 o'clock, she had had her seizure and her bloods are taken fairly shortly after that and her sodium level -- this is 3 o'clock on the Saturday morning, this is the Friday we are looking at -- and her sodium levels are 118. Are you, from your experience, able to express any view of if her sodium levels were that low at 3 o'clock in the morning, roughly, what her presentation was likely to be like during the evening of the Friday?

A. Listless is a good way of describing it. She may have complained of a headache. She may have been drowsy. And I think those adjectives could be applied in increasing amounts as the evening would have gone by.

Q. Noticeably so?

A. Noticeably so, particularly in a child who was talking to her parents, talking to those around her in the morning. And I think the contrast between late afternoon, evening, and the morning, reading the statements, is enormous.

Q. Striking?

A. Yes. The descriptions that various people have made of how Raychel was late afternoon/early evening, in

comparison to how she was described early in the morning or at 9 o'clock.

MR CAMPBELL: Mr Chairman, can the witness be asked whether the administration of Zofran at around 6 pm would have enabled Raychel to rally somewhat in view of the evidence of Nurse McAuley who says that she saw her walking in the corridor at approximately 7.30 with her two brothers?

A. I don't think it would have made any difference.

MS ANYADIKE-DANES: You don't think it would have had that rallying effect?

A. No.

Q. This is entirely hypothetical, and I understand that, but from how you have described her, would you have been expecting her to have been walking about?

THE CHAIRMAN: It's either hypothetical or it's not. If we're going to ask the doctor if he expected Raychel to be walking about because there's a dispute about whether she was walking about or not, then "hypothetical" isn't the right word.

MS ANYADIKE-DANES: I was about to correct myself. "Hypothetical" is the wrong term.

Out of your experience given how you have just described her, would you have expected her to be walking around at that time?

A. At 6 o'clock in the evening?

Q. Yes.

A. She may well have been tired and not wanting to be particularly active, but she was certainly ...

Q. Capable?

A. Capable had she to -- and certainly capable of holding a normal conversation with people.

Q. But her demeanour would have been different than it had been described earlier during the day?

A. Sorry, would her demeanour have been normally different to how it had been earlier on?

THE CHAIRMAN: I think the question is: if she was capable of being up and about and walking and talking at 6 pm, would she have been doing so in a rather less animated way than she was reported to present on the ward round at about 8.30?

A. Yes, because she would have been tired and fatigued from the day after surgery. She might have been bright and bouncy first thing in the morning, but after an operation it's not unreasonable to --

MS ANYADIKE-DANES: Sorry, we may be at cross-purposes.

A. Yes.

Q. Let me try and clarify it. The question that I was asking you came from what you thought the likely effects of a reduced level of sodium in her body would be, so

developing hyponatraemia. So I put to you that we only know two sodium results for Raychel -- we know three actually, but the last two are in such close proximity it doesn't matter. We have 119 from bloods taken shortly after 3 o'clock in the morning and we have 137 before she went to surgery. So if you were working back from the 119 as representing roughly where she was at 3 o'clock on the Saturday morning, what I was asking you is: can you express a view of how you would have expected her to be during the evening, the early evening and the rest of the evening, of that Friday?

A. Right. So assuming that for the sake of argument a linear progression in her serum sodium level from 137 down to 118 -- call it 30 hours later ... If it's a linear progression then late afternoon, about halfway down that process, she would have had a serum sodium of around about 128/129. She would have been -- I am pretty sure she would have been fatigued, listless, had a sore head; not particularly engaging with those around her.

Q. Before we get into the linear progression point, the question I had asked you is: would that be noticeable, that change in her demeanour?

A. Yes.

Q. And I think you had said "yes" and "striking". So now

is there any reason to suppose that the fall in sodium happens in that linear way?

A. I don't know whether it's a linear or a parabolic fall under these circumstances, so I can't advise you on that.

Q. Thank you. Then if you look at that table, you can see that there is an incident, the first incident of coffee-ground vomiting is at 9 o'clock. We've asked a number of clinicians and experts how they think that arises, but leaving that part of it aside, for you as an anaesthetist, how significant is it to you that you note or are told about coffee-ground vomiting?

A. My understanding and interpretation of being told that is that it's consequent to the trauma to the stomach lining caused by repeated and forceful vomiting.

Q. So if you're managing her fluids -- and as you said earlier, you do regularly manage the fluids of children in Raychel's circumstances -- is that a significant factor for you if you were told that?

A. Its significance is that there has been a significant amount of vomiting leading up to it.

Q. And if that's the first you're told about her condition, what action do you think should be taken at that stage?

A. You'd have a proper look at the patient, examine the patient carefully, ascertain what events have gone on

leading up to this, and hearing what's gone on and looking at her demeanour and being told that she's drowsy, less interested, has a sore head, blood sample.

Q. I think you expressed a view that you thought that a more senior colleague ought to have been brought in, a more senior clinician ought to have been brought in at some time during that evening and I think you took the view that the JHOs or somebody -- by "the other persons", do you mean the nurses?

A. It depends who was empowered. I think it would be unfair to expect the nurses to direct doctors as to who they should bring in and when. I think one of the features is that it wasn't clear who was actually responsible for Raychel during the course of this day.

I think that the junior doctors were out of their depth, they should have realised they were out of their depth, and asked for help, either from one of their senior colleagues or from a senior paediatrician colleague. And it could be at any time from 4 o'clock in the afternoon onwards would have been appropriate, but the longer it went on, I think the greater the need for a more senior appraisal of events.

Q. Let's assume it happens at 10 o'clock because by that time, I think, you've got two incidences of coffee-ground vomiting and you've got a number of actual

recorded vomits and you're approaching almost 24 hours since her surgery. So let's assume a senior colleague is brought in at that stage. In terms of fluid management and addressing what might be a developing hyponatraemia, what do you say could have been done at that stage?

A. A blood sample should have been taken for electrolyte measurement in a biochemistry lab and, depending upon the findings, fluid management tailored accordingly.

Q. Sorry?

A. Intravenous fluid prescription tailored according to what was found?

Q. What does that mean out of your experience as an anaesthetist?

A. If you have a patient who has a low serum sodium level and you look at the history and it's developed over the last 12 to 24 hours, you can see that it's partly brought on in response to surgery, partly by prolonged protracted vomiting and hypotonic fluids have been given, the answer is that it is acute hyponatraemia and needs to be treated with a degree of urgency. The first thing to do is to stop the administration of any hypotonic fluids and to replace them, ideally with hypertonic saline, but perhaps we're going to discuss this later. It's understandable why no one was

comfortable with that. But certainly to replace the hypotonic fluids that were being given with ideally normal saline, 0.9 per cent sodium chloride solution, and then to see what happened and do a further blood sample after a few hours had elapsed to see if there was any improvement in the situation.

Q. Dr Scott-Jupp -- he is the inquiry's paediatric expert, as you know -- says in his report at 222-004-026:

"Had Raychel's electrolytes been checked in the early evening on 8 June, it's likely that a very low sodium would have been discovered. An intervention by reducing her fluid and changing it to 0.9 per cent saline might well have prevented the later deterioration and her death."

A. Yes, I agree with him.

Q. Thank you. I would like to move to the actions post seizure. Raychel has a seizure at about 3 o'clock in the morning, the Saturday. As it happens, Dr Johnston, who's a paediatric SHO, is proximate to it, and he comes and helps. His first task is to address the seizure and he administers two amounts of diazepam and he does do that and that probably happens around about 3.15 or thereabouts. His next step is to bleep the surgical JHO because he wants two things done according to his evidence. First, he wants somebody to

help him take bloods because, even at that stage and without knowing very much about Raychel, not his patient as you'll appreciate, he suspected an electrolyte imbalance was the problem. He's thinking why has she had a seizure. That's what he suspects, so bloods need to be taken and that's what he wants the JHO to do, who is Dr Curran.

He also wants senior surgical involvement because he's a bit concerned that there might be some sort of surgical cause for her presentation and therefore he will need them because that's not his area. And in his note that he made in her charts, he actually recorded "registrar/consultant", which is just an indication of the level of help he thought he needed at that stage.

So Dr Curran comes and he takes the bloods for analysis, laboratory analysis, and then at some point after he's done that he bleeps his SHO, who's Mr Zafar, and that happens perhaps about 3.45, thereabouts, something of that nature, and he can't attend. In fact, he is unable to attend because he's tied up in A&E until about 5 o'clock in the morning. What happens between then and Dr Johnston bringing in his registrar -- and he goes to find her or talk to her at about 4 o'clock -- is they are chasing up the bloods and he's also performing an ECG. So from the moment he stabilises Raychel,

if we take that to be about 3.15, until he goes to discuss her with his registrar, that's about 45 minutes. You have addressed the opportunities, if I can put it that way, or what might have been done after Raychel had suffered her seizure. What do you say should have been happening in that 45 minutes?

A. Right. When Dr Johnston saw Raychel, she was having a fit, and it's a very common presentation to a paediatric ward, a child having a fit that needs to be treated. So he wouldn't have been entirely out of his comfort zone to begin with, but it looks as though he took stock of the situation pretty quickly and worked out what had possibly gone on. I think he realised at a fairly early stage that he wasn't going to be able to sort this himself and that he needed senior help. And I think one has to perhaps discriminate what one would like to happen in an ideal world and what was reasonable to expect in that room in 2001.

MR STITT: Sorry to interject in the middle of this, but I suspect that we're getting to a comment as to the appropriateness of Dr Johnston's actions and I would like to record my concern that this witness, who's undoubtedly highly qualified in his field, is not appropriately qualified to comment on the actions of the junior paediatrician. That's really the field of

Mr Scott-Jupp, who's already given his opinion in relation to this.

THE CHAIRMAN: And with whom this witness's evidence was raised.

MR STITT: Yes. I still make my point.

THE CHAIRMAN: I will bear in mind -- I think, to be fair, Dr Haynes was about to put one caveat on his evidence, which is what might ideally be done and what was actually done in 2001. I presume his second caveat is what might reasonably be done in a district general hospital in 2001 and what might be done by people at different levels.

A. Yes.

THE CHAIRMAN: I will bear all that in mind along with your caution about which discipline is criticising which other discipline.

MR STITT: I'm glad you have dealt with that, sir.

MS ANYADIKE-DANES: Bearing in mind that this is 2001, this is a paediatric SHO and he's meeting a situation of a 9-year-old child in extremis, so with all that in mind, what from your point of view could have been done, let me put it that way, in that 45 minutes?

A. The most important thing was to do a blood sample, which was done.

Q. Yes.

A. If I can go back to before 2001 -- and I know that anecdote doesn't provide a strong reason for anything, but I go back to my trainee days as a paediatric senior house officer. It was made very clear to us that if there's a seriously-ill child and we were out of our depth, we were to call a consultant to attend. And if we couldn't get the consultant on call to attend, another consultant. And I appreciate that is personal anecdote, but it is in the context of a district general hospital in the 1980s. If I look -- and I think I am qualified to judge in that half of my work is paediatric intensive care work and, not uncommonly, we are asked to look at children who have had a developing illness or worsening condition over a period of hours, and if a trainee doctor has been trying to do something beyond his or her capabilities, it is obvious and we say so, "Why did you not call your consultant?"

THE CHAIRMAN: The response to that from Dr Johnston will be "I called for senior assistance, but it wasn't at consultant level". He's on the right track, but are you saying he's not as far along that track as he should be?

A. I think he was definitely on the right track and I think it is difficult -- I wouldn't want to criticise Dr Johnston at all for this, but it is difficult to say, "Actually, I have a real problem here, please get

someone who really is in a position to help".

MS ANYADIKE-DANES: Actually Dr Johnston was even further along that right track because right from the outset he was of the view that he either needed a registrar or a consultant. In his mind though, the registrar or consultant he required was a surgical one, and that was, on his evidence, something that he told Dr Curran right from the outset. He was asked this question as to why didn't he contact either Dr Trainor, who was his registrar, or someone more senior himself. And the answer to that was: because he understood that senior surgical help was going to come. And it was when he got to the point when he'd completed the tests that he was carrying out and Raychel was stabilised, senior surgical help had not come and so he then took it upon himself to go and speak to his registrar. That's as I understand his evidence. When you say he should have contacted senior help, the point that I ask you, given that circumstance and not trying to criticise Dr Johnston in any way, but just trying to see what the options were, is it your view that he shouldn't actually have been waiting and relying on the surgical registrar or consultant coming, but recognising the position he was in, he should have been contacting earlier a more senior colleague?

MR STITT: I repeat my objection. The question was raised, "I don't mean to criticise Dr Johnston ...", but there's obvious criticism in the question. The second point is this: Mr Foster, who was not shy about making his opinion known --

THE CHAIRMAN: Which you objected to.

MR STITT: Which I objected to and which didn't attract favour from the chairman. Mr Foster gave his views in a robust manner. Mr Foster was asked in his main report about:

"... areas in which the surgical care of Raychel Ferguson at Altnagelvin Hospital in June 2001 fell below a satisfactory standard."

And he gives a number of bullet points, both general and specific. But he doesn't criticise Dr Johnston for not getting somebody there sooner and he had ample opportunity so to do. He's the surgeon, Mr Scott-Jupp is a paediatric surgeon, and I respectfully submit that's really the height of it when it comes to this particular issue. It's not an anaesthetic issue and the witness has been fair enough to say that he's going from his days as a junior paediatric doctor and anecdotally, which is entirely reasonable, but not expert evidence.

THE CHAIRMAN: Well, on your specific objection to the question, I think you're right, you can't start

a question saying, "Without criticising Dr Johnston, should he have done more to get the registrar?", or, "Should he have left it to somebody else to do it?" I think that's right.

I will hear and accept Dr Haynes' evidence on this, but I do accept your point that, to the extent that his written report criticises the actions which were taken after Raychel had had her seizure and to the extent that he questions whether something more should have been done, he is going beyond what the other experts have said. Okay?

MR STITT: Noted, thank you.

THE CHAIRMAN: Ms Anyadike-Danes?

MS ANYADIKE-DANES: Thank you.

Is it your view that Dr Johnston might have, instead of waiting for the senior surgical team, if I can put it that way, might himself sooner have contacted his own senior colleague?

A. Yes. And that is not anecdote; that is looking at it with a view of a consultant in paediatric intensive care.

THE CHAIRMAN: Thank you.

MS ANYADIKE-DANES: Right.

A. No anecdote.

Q. If that had happened, what is it that you would have

wanted that level of involvement to do?

A. Looking at Raychel's case, as we are with the benefit of hindsight and the benefit of everyone's input, it's easy to say now looking back that the correct treatment was to ascertain she had acute hyponatraemia and to treat it with hypertonic saline. However, it is fair to say that probably nobody in that room had seen a child have a convulsion in their working life because of hyponatraemia at that point. So in the middle of the night, a child who's unexpectedly seriously ill, it's simple to look back and say, "This is the correct treatment".

But in the context of a district general hospital in 2001, it is quite understandable why there's some hesitancy and some unwillingness to proceed down that line using something that none of the people in the room were probably particularly familiar with.

Q. Yes. I haven't asked you in terms of what you think Dr Johnston should do because I think you've been quite fair in saying Dr Johnston's main role is stabilising Raychel, which he did do, getting the blood tests under way, which he did, and contacting senior help. And you've expressed a view as to when you think he should have been contacting the senior help, which is, you say, perhaps earlier than he did.

So so far that's what you think Dr Johnston should have been doing. Dr Curran, of course, is even less qualified than Dr Johnston, he's just a JHO. So my question was: if there had been more senior involvement, whether it be a registrar or whether it be consultant, what is it that you would have wanted that person to be doing that might have made a difference, if a difference could have been made, at any time to Raychel? That's what I'm asking you.

A. What was needed for Raychel at that time was someone who had the knowledge and confidence to treat the hyponatraemia correctly. That person was most likely to be either a senior trainee or a consultant. If I can refer you back to what Mr Bhalla said in his statement, reading what he said a few days ago, to me he had a clear understanding of the pathophysiology of what had happened to Raychel and it is my impression that he would have taken initiative and treated her correctly.

Q. And from your point of view, what would that have involved?

A. Hypertonic saline, given intravenously.

Q. For various reasons which are not to do with, so far as we can tell, either Dr Johnston or Dr Curran, it takes some time for the blood test results to come back. In fact, they're not back by the time Dr Johnston goes to

discuss with Dr Trainor at about 4 o'clock. I think it's about 4.15 or thereabouts they arrive. So my question to you is: had Dr Bhalla or his consultant arrived earlier, what is it that you'd have expected them to be able to do in advance of receiving the blood results?

A. It depends on whether the person attending had the courage of his or her convictions to assume that the diagnosis was hyponatraemia related to events that had happened following surgery. And I think it is an unfair expectation that someone should assume that that is a diagnosis.

THE CHAIRMAN: Because it was expressed to me earlier, doctor, that if you were thinking at that time in that hospital about what had gone wrong, hyponatraemia might be well down the list of things that might occur to you.

A. Yes.

THE CHAIRMAN: And when you said earlier that you're sure that nobody in that room had ever seen a child have a fit due to hyponatraemia, that would apply to the room at any stage, wouldn't it? It would apply to the room when the consultant arrived --

A. Yes.

THE CHAIRMAN: -- because nobody in Altnagelvin would have had this experience.

A. I think it extremely unlikely that anyone would knowingly have seen a child have a fit from hyponatraemia of anyone who attended Raychel in Altnagelvin.

THE CHAIRMAN: Is the gist of what you're saying that -- and I think it's perhaps an important point for the family -- you do not say that any earlier more intensive response would necessarily have saved Raychel?

A. If Raychel had received hypertonic saline at an earlier juncture then she would -- there's a greater chance she would have survived. But the question is: did anyone have enough information in front of them to know that that was the right thing to do? And it would have been speculative treatment by whoever gave it at that point in time until a blood result became available. As it turns out, it would have been the right treatment, but ...

THE CHAIRMAN: That is something that you know with retrospect that it would have been the right treatment.

A. It's very easy to look back with hindsight.

THE CHAIRMAN: Another point that's been made to me by a number of people is that the blood result and particularly the sodium reading was so out of the ordinary, at 119, that a natural instinct is to say, "That can't be right, let's check it again".

A. No, I disagree on that. Strongly disagree.

THE CHAIRMAN: You do, because?

A. Dr Trainor had checked that the sample hadn't been taken from the same arm as the intravenous fluid had been given, so the dilutional component was taken out. The hospital laboratory would run routine daily quality control checks on its assays, so they wouldn't give you a wrong answer. One presumes that the right patient's name was put on the sample. And there is not going to be an artefact caused by the taking of blood which is going to change the sodium concentration. If you have difficulty taking a blood sample from a patient, you may cause lysis of the red cells and you may get a falsely high potassium reading, but you won't get an alteration in the sodium concentration.

MS ANYADIKE-DANES: Do you have any experience of having received a wrong result back from the laboratory?

A. In terms of and incorrectly-performed assays?

Q. Sodium result, yes.

A. No. I have dealt with samples where it's been repeated and it's not been exactly the same, but one that has -- on several occasions that has been significantly low and another one has been significantly low with a similar, but not identical number, value.

Q. Does that mean that your instinct would have been to

trust that result?
A. Yes.
Q. That result wouldn't have come until -- I think it's about 4.15, that result comes, which is roughly the same time as Dr Trainor arrives. So there is no more senior person there until she comes at 4.15 and that's at the same time as the results. As you might imagine, this is quite an important point for the family as to what actually happened and whether there was any possibility of anything that might reasonably be said to be done that could have saved Raychel. So one needs to be clear about whether one's ruling out any possibility or not.
At that time, from what you have seen described of Raychel, what was Raychel's condition?
A. Are you able to put up the timeline that details the --
Q. Yes, 312-013-009. This is a timeline that I referred to in opening. It's the clinical timeline post collapse on Friday the 9th. So it starts off at 3 o'clock and goes all the way down to when she's admitted to PICU in the Children's Hospital, down to noon. We have tried to compile the events from all the evidence available and, where there are conflicts in that -- because we don't have a documentary record, all we have is people's witnesses -- then we've indicated that in the paragraph under "conflicts in evidence".

So this is Dr Trainor examining Raychel. In a previous page, at 008, one sees that this is all under the time of 4.15. Is this the timeline you wanted, Dr Haynes?
A. Yes.
Q. So in relation to that timeline --
A. Perhaps if we could go back to the beginning of the document.
Q. Yes.
A. From when --
Q. If we go back to 001 of the document.
A. So she's seen to have a fit. If we can go on to the next page.
Q. We're just bringing you a hard copy in case it's easier for you to refer. (Handed).
A. Thank you. Right, if you go on to 002, the third paragraph under the events column:
"Raychel was gurgling and salivating so Dr Johnston performed suction to maintain a patent airway. She was also pushing the mask away."
That means she was able to make purposeful movements, which means that she had cortical activity within the brain, within the motor cortex, and was able to respond appropriately to a noxious stimulus or what seemed to be noxious stimulus. The next sentence:

"Her pupils were equal and responding to light."
That means that the reflexes passing from the eye through the visual cortex through the brainstem and back to the pupillary muscles were intact, so she had brainstem function as well at that point in time. (Pause.)
If we move on to 007, so at 04.00, so this is after the initial event, Mr Ferguson arrives. He says that:
"Raychel's bed was surrounded by nurses and doctors. [He] saw Raychel shaking/trembling in bed."
So I presume that means that she was having a further seizure at this point in time.
Q. From your understanding, might that be what Staff Nurse Noble refers to as intermittent tonic episodes?
A. Yes. Though shaking is -- if she's tonic, she'd be holding a sustained clenched posture, whereas if she's shaking, that would be clonus or the shaking component of a fit. And then if we move on to page 009 --
Q. Sorry, there might be one at 008 at 4.15, Staff Nurse Noble.
A. Yes. Thank you:
"Staff Nurse Noble informed her [that's Dr Trainor] that Raychel's tonic episodes were now every 2 or 3 minutes and that her pupils were sluggish, but reacting to light."

So that again means that, at 04.15, the brainstem reflexes -- or the reflexes from her eye to the visual cortex, to her brain, and back to the pupillary muscles, there was still function, so she's certainly not brainstem dead at 04.15.
Then if you go on to page 009, now it's still under the time of 04.15. So we have here:
"Raychel looks very unwell and is unresponsive. Pupils are dilated and unresponsive."
By that I presume that someone has looked with a bright light and there's been no reflex response to it. So I think if we are looking at what happened, at what point the brainstem function ceased, it's at 4.15 or shortly before.
Q. Is there a significance to the fact that she's breathing?
A. Yes.
Q. What is that significance? That's just the paragraph immediately below, "her pupils were dilated and unreactive".
A. The fact that she was breathing means that again there was still brainstem function because the respiratory centre is within the brainstem and it is able to direct the respiratory muscles to breathe. So there was still brainstem function at that point if she was breathing.

THE CHAIRMAN: I'm sorry, I think you said a moment ago that if someone has looked in her eyes with a bright light and there's no reflex, that that indicates that brainstem function has ceased. Are those lines a little bit inconsistent?

A. They are a little bit inconsistent, but it's not straightforward. For the light reflex to work, the return pathway from the brainstem to the eyes, the nerves follow a very torturous course and are vulnerable to compression by a swollen brain. So even if there had been some brainstem function at that point in time, compression of the nerve returning to the eye could have precluded completion of the reflex arc. So although failure of the light reflex is a component of assessing brainstem function, it is not the only one. The fact that there was no pupillary reflex on either side certainly points in the direction of the fact that there's significant raised intracranial pressure caused by cerebral oedema and swelling. And whether or not the lack of pupillary reflex was entirely due to lack of brainstem function or because of the oedema compressing the nerves on the return pathway, you can't differentiate. The fact that Raychel was still breathing at that point means that there's still activity in the respiratory centre in the brainstem.

MS ANYADIKE-DANES: Can I take you to 013 then? The time is 5 o'clock. You see that Raychel remains unresponsive, but is maintaining her oxygen saturations. And then it says:

"Her eyes became fixed and dilated [well, presumably they still are]. After five minutes, Raychel's oxygen saturations fell to 80 per cent, then 70 per cent, and she became apnoeic. Is that a significant events?

A. Yes. Because as far as you can tell from the timeline, that is the point in time at which Raychel's brainstem, or the respiratory centre in her brainstem, ceased functioning and ceased directing her respiratory muscles to breathe.

Q. If these times are accurate, which they may not be, it would be a tall order for people in those sorts of circumstances to be getting everything entirely accurate, but if they were, that would put that event at about 5.05.

A. Yes.

Q. So it's roughly about two hours after she had her seizure?

A. Yes.

Q. And you've described a sort of deterioration, diminishing brainstem function. Would that be fair to characterise it in that way?

A. Yes. There's a point when there's obvious cortical function when she was making a purposeful defensive movement against the oxygen mask, so there's still cortical function then. The first point when there's the absence of pupillary reflex, it could be the brainstem that isn't working or it could be compression of both nerves coming back. But the point at which the respiratory drives ceases that means that when -- you can't say for certain it's the entire brainstem, but the respiratory centre within the brainstem stopped functioning at that point.

Q. Yes. And in terms of who's there over that period of two hours, Dr Trainor arrives at about 4.15, so there's about 45 minutes or so of her presence. Dr McCord arrives at about 5-ish or there or thereabouts and, not long after him, is Mr Zafar and Mr Bhalla. So the senior people arrive round about this time. So in terms of who was there as the most senior person in the latter stages, it'd be that 45 minutes that Dr Trainor was there?

A. As far as I can tell from this, that's the case.

Q. Dr Warde, who was a consultant anaesthetist instructed originally by the Trust prior to the inquest, he provided a report, and then he provided a commentary on a separate page of his report. Have you seen his

report?

A. Yes.

Q. And that's to be found at 317-009-012, and maybe we'll pull that up. It didn't form part of his main report, which is, in the traditional way, signed off, but he provided these additional comments. He says:

"One could question why, upon receipt of the initial electrolyte results revealing the sodium of 119, Dr Trainor did not immediately alter the IV fluid therapy to 0.9 sodium chloride, but instead asked for a repeat estimation."

And then he goes on to speculate about whether that would have made any difference. That was his first question and he raises another question, but we'll leave that for a moment. I think it was when the chairman was asking you, but your view is you would have trusted that first result of 119 and acted on it, as I understand it.

A. Yes, I would have.

Q. And Dr Warde's view as to what action should have been taken on it is to alter the IV fluid therapy to 0.9 per cent. Can you comment on whether you'd have done that or whether you'd have done anything different?

A. I'd have done what he suggested in the first instance.

Q. Anything further?

A. The only other thing to do would have been to have got

hold of some hypertonic sodium chloride solution and given some, but I think we've ascertained in the course of preparation for this that this wasn't readily available to hand in the paediatric ward.

Q. Yes, so even if that had been called for, that would have taken some time before it would have arrived?

A. Yes. The only other thing which could have been done would have been to have given an osmotic diuretic and the one that we use is mannitol, which is used to treat cerebral oedema, and may well have been available to hand within the operating theatre suite rather than pharmacy.

Q. But at that stage, you're dealing with a paediatric registrar and, apart from the very low sodium level and you are thinking maybe that is an electrolyte problem that's produced that, apart from that there's no CT scan to guide as to whether there actually is a cerebral oedema, and in the absence of that, would you still have said that you might have nonetheless treated with mannitol?

A. Yes. I think you're faced with a child who's in extremis. You know that to get a CT scan is going to take at least an hour, probably, by the time everyone's in to do it, and you have got serious neurological signs and you're at the point where something urgently has to

be done and it would be worth, even if you weren't absolutely sure, it would be worth trying.

Q. Can I put this to you in terms of Dr Trainor's perspective -- and as you know, Dr Scott-Jupp is of a similar view -- which is that that result was just completely out of her experience. She, unlike you, didn't feel that she could just trust it and she was concerned that, if she acted on it, she might do the wrong thing, it might be that Raychel had too much sodium, for example, and you've acted in a way completely contrary to what you would have done had you had a correct result. If Raychel's electrolytes were deranged in a way that she had too much sodium, does that give a similar presentation to too low sodium?

A. Not with the same acuteness and a patient with even a rapidly-raised sodium will not present with a seizure like this.

Q. If that treatment had been administered, so you changed the fluids immediately to 0.9 per cent, of the range of things they were considering at the time, the differential diagnoses, one of them was meningitis, and the rest -- they really didn't know. They were waiting to get -- well, she was waiting for more senior guidance, to be honest, I think, would be her position as to what else was happening. But if one had

administered this fluid therapy that Dr Warde has suggested and which you have agreed with, are there circumstances in which there could be a downside to doing that?

A. No. If they had administered normal saline and, say, the opposite had been the case and that because of Raychel vomiting and loss of water, she actually was hypernatraemic, the 0.9 per sodium chloride which contains sodium in the concentration of 154 millimoles per litre, if the hypernatraemia was such that it was dangerous, it would be at a higher level than that and at most it would keep the serum sodium the same, but would probably in fact elevate(?) it a little. So it wouldn't have done any harm.

Q. Are you saying that you can't see a downside to --

A. I can't see any downside in giving 0.9 per cent saline.

Q. Could there be a downside in doing something a little more aggressive like administering the mannitol?

A. Given the state that Raychel was in, which was extremely serious, there could potentially, if she was severely hypernatraemic, be a downside, but the chances of her being hypernatraemic are so far removed that, on the balance of risks, it would have been a sensible thing to do.

Q. Dr Warde then goes further and says that some people

might argue -- and he's by no means advocating that that would be a normal thing to do -- that faced with a symptomatic patient with acute severe hyponatraemia, it would have been more appropriate to be more aggressive and commence treatment with hypertonic sodium chloride, 3 per cent. And then he recognises the point that that might not have been readily available. But leaving aside how available it was, would you have thought that to have been something that you really wouldn't expect somebody in Dr Trainor's position to even countenance at that stage?

A. Giving hypertonic saline?

Q. Yes.

A. I think given where she was at that point in time and the environment she worked in, even with the benefit of hindsight, it is beyond reasonable expectation that this would be something that would spring to her mind rapidly. The question that has to be asked is: why weren't the junior doctors aware in 2001 of the possibility of this happening and how would you treat it?

Q. Sorry, just so that I'm clear, maybe you'd explain what you mean by that.

A. Why wasn't the teaching be it at Altnagelvin or the university or training programmes, where intravenous

fluids are such an integral part of so many hospital admissions, why isn't the teaching of fluid and electrolyte balance more rigorous and up-to-date in 2001? Or why wasn't it?

THE CHAIRMAN: Or in the years leading up to 2001 for those who'd come through --

A. Why in 2001 are there so many people working in this environment who haven't really given it proper thought and aren't up-to-date with what was current thinking in 2001, because most patients coming into hospital in 2001 who are unwell enough to stay overnight will probably have intravenous fluids at some point during their hospital stay.

MS ANYADIKE-DANES: When you say "proper training", leaving aside whether you let a patient get into the state in the first place, but faced with this situation, are you saying that "proper training" would mean that they would be aware of the possibility of administering the 0.9 per cent as soon as they realised they had got a sodium result as low as that?

A. Or even aware of the fact that the correct treatment is hypertonic saline because now you have a generation of junior medical staff who are increasingly aware of this problem, which wasn't the case in 2001. So the more general question is: why is the situation in 2001 that

so many members of the medical staff weren't familiar with managing electrolyte problems, how to prevent them and how to treat them?

Q. Are you saying that that awareness and that knowledge is something that, in your experience, other members of medical staff in other hospitals would have in 2001?

A. In 2001, a significant proportion of medical staff around the UK would have been aware of (a) the pitfall of letting the development of hyponatraemia occur and a significant number, but by no means universally, would have known that hypertonic saline is the required acute treatment for it.

MS ANYADIKE-DANES: The stenographer will require a break, but I don't have very much more. So if I can ask --

THE CHAIRMAN: If you can wrap up fairly quickly, then, Ms Anyadike-Danes.

MR STITT: I hesitate to intervene, but I do have two points.

THE CHAIRMAN: We are almost finished, so let's take break for 10 minutes.

(2.30 pm)

(A short break)

(2.40 pm)

(Delay in proceedings)

(2.50 pm)

MS ANYADIKE-DANES: Dr Haynes, just a couple more questions.

Leading immediately on from where we were, which was discussing Dr Warde's view of what might have been done and your view of how many people were likely to have known or should have known that that was an appropriate treatment of a low sodium at that level. If either of those things had happened when the result came back -- let's take the immediate cessation of the Solution No. 18 and the commencement of 0.9 per cent sodium chloride.

So the result's come back at about 4.15, that's roughly the same time Dr Trainor comes in, so she sees that result and she says do that and say that that had happened. So far as you can help us with your experience, what is the likely effect of that?

A. If she'd given hypertonic saline or just given normal saline?

Q. If she had given the 0.9 per cent sodium chloride.

A. I can't say with certainty whether it would have been enough at that point in time. If hypertonic saline had been given, then there is certainly a reasonable chance that the situation might have been remedied.

Q. And what does that mean?

A. Raychel might have survived.

THE CHAIRMAN: In what condition?

A. If you look -- well, I think if you look at the reference number 3 I gave in my supplementary report, which was written in the early 1990s, it might help, if you can bring it up.

MS ANYADIKE-DANES: Do you have the hard copy there?

A. No, it didn't come with the bundle you sent, I'm afraid.

MR STITT: Might I respectfully suggest, sir, that before going to the reference, the inquiry might usefully look at the same report, the same document, 220-003-017?

THE CHAIRMAN: Yes.

MR STITT: It is pertinent to this point, if it could be brought up. If the top half of the page could be magnified. I would have hoped that perhaps the witness's attention could be drawn to the sentence beginning "even", six lines done:

"Even if hypertonic saline had been in the room and given at that point in time [4.15], it is likely in my opinion that the situation was, by then, irretrievable."

A. Yes. And if we then continue through the next sentence:

"If it had been given prior to the time that Raychel's pupils became fixed and dilated, ie cessation of brainstem function, then it is possible that the situation would still have been recoverable. And I think we're looking at trying to unpick the point in

time at which the situation became irretrievable, regardless -- I think the situation was close to being irretrievable, but that reference which is appended to this report was written in the early 1990s and it describes the satisfactory reversal of major neurological signs, not dissimilar to those experienced by Raychel with good outcomes in a significant number of a series of patients. I can't remember the details of it, unfortunately, but the majority survived with the use of hypertonic saline, and that was published in the early 1990s.

THE CHAIRMAN: Sorry, but my specific question was: in what condition? With brain damage or not?

A. With a satisfactory neurological outcome.

THE CHAIRMAN: Thank you.

MR STITT: That answer was predicated on the fact that the pupils being fixed and dilated pre-dated in time the 4.15. I apologise if I've read this incorrectly, but it's important that the right information is before you, and if I'm wrong, I'm wrong. It's important that the accurate information is here. I'm happy to stand corrected if necessary. If we look at the timeline and the chronology prepared for us, which is 312-004-005, the bottom entry.

THE CHAIRMAN: Let's go back to the one we were looking at

earlier, which is 312-013-009. Raychel's pupils were dilated and unreactive at about 4.15.

MR STITT: That's the point I'm making, although it's a different document. It's 4.15, it doesn't pre-date in time, ergo when the first suggestion of hypertonic is made as a runner, it doesn't look good --

A. No, but ...

MR STITT: -- if the starting point is fixed and dilated.

THE CHAIRMAN: Am I right in thinking, doctor, this depends on who's there at what time?

A. This timeline, as far as I can understand it, has been drawn together by piecing together, as best one can, the information available. So I think the sequence of events is as good as it can be, but it's by no means a contemporaneous record of events.

THE CHAIRMAN: That's right.

A. In the same box on that page, "breathing sounded rattly", she was breathing. And I think if, as Dr Warde has suggested with the benefit of hindsight, hypertonic saline had been given while she was still breathing, then there was still a chance. Whether that's a significant chance or a small chance that Raychel might have recovered and one cannot predict with any certainty what her long-term developmental and neurological function would have been subsequently. But

I think, as a doctor, if one knew that there was a chance, by giving an appropriate or a treatment at that point in time, and one hadn't decided that the patient -- hadn't reached the stage where they weren't for resuscitation, that it was all futile, there hadn't been an informed decision like that, then you had to go ahead and do it.

THE CHAIRMAN: I've understood your evidence generally to be really quite critical of oversights and errors and systems within Altnagelvin and specifically relating to the way that Raychel was cared for or wasn't very well cared for. And I think you've been quite clear and quite sure of what you recognise as failures. When we come to the sequence after the seizure, do I understand, from the way that you introduced this topic, that by distinguishing between the ideal and what one might reasonably have expected to happen in 2001 and the referral to Dr Warde's report, which is also, at best, slightly circumspect criticism, some might argue and one might wonder, that sort of language -- do I understand you to be, to the extent that you are critical, to be more cautious about any criticism that you are levelling about what happened after the seizure?

A. Yes, because the tragedy of this is that of all the opportunities that I believe were lost, when the

situation was relatively easily rectifiable with an almost certain chance of a good outcome for Raychel during the day and --

THE CHAIRMAN: This is looking at what you do in an emergency, whereas all the mistakes, if they were mistakes, were made earlier?

A. And I think a lot of people in that room, from 3 o'clock to 5 o'clock -- it was the middle of the night -- many of them didn't even have any direct responsibility for Raychel. They were pushed into a situation all of a sudden, trying to work out quickly what to do with something that none of them had probably ever seen before, and I would hope that nowadays knowledge of electrolyte management is such generally that it wouldn't happen again. But I can understand the absolute terror that must have been present in that room of people trying to work out what to do having never seen it before and being put in a situation where they might have to make a very bold judgment of what they should or shouldn't do and generally I am very hesitant to offer any criticism of events from 3 o'clock onwards.

But I would confirm that you've picked up my sentiments about the infrastructure, if you like, and the structure for care, particularly for children, in the hospital that led to the catastrophic development of

events over the preceding day.
THE CHAIRMAN: And in fact, just before the break you broadened that into a concern about how well our doctors were being taught.
A. Yes.
THE CHAIRMAN: Is there anything left, Mr Stitt?
MR STITT: Yes, arising and linked to it was my second point and perhaps I could deal with it at this juncture.
It's the expression of strong disagreement articulated by the witness when it came to the decision to go for a second test. And he was quite firm that that really was a mistake. It may be obvious to us all, but could I ask that the witness have an opportunity to see what Mr Foster said on that?
THE CHAIRMAN: I thought we'd made this point generally -- and I think I had asked Dr Haynes this -- and he suggested the view of others was that it was so far out of the range that you would wait. And you've expressed the view that, no, this is so potentially disastrous a result that you have to start treating it particularly because, as Ms Anyadike-Danes drew out, there's no real downside to starting to treat.
A. That's correct. If I could perhaps add --
THE CHAIRMAN: What did you want to add?
MR STITT: You did, sir, I recall clearly that you did say

there were other opinions. I was merely, for reference purposes, articulating the two references in question. I'm giving the witness an opportunity to agree or disagree with those specific sentiments which are contained in roughly two sentences.
THE CHAIRMAN: Well, you give me Mr Foster's two sentences and, Dr Haynes, if you could hold in your head the extra point you wanted to make and we'll see if we can get through this.
MR STITT: For the record, it's 223-002-024. And I will read the sentence to you, this is dealing with Dr Trainor deciding to go for the re-test.
THE CHAIRMAN: And this is the evidence of Mr Foster?
MR STITT: This is Mr Foster. He deals with whether it was the same arm and so on for the second test:
"In fact, the blood had not been taken from this area and the abnormally-low sodium was a genuine result. She asked the house officer to repeat the electrolytes. This is a standard procedure when a result is very abnormal."
And that's the specialist surgeon to the inquiry's view: a standard procedure when it's very abnormal. You'd agree it was very abnormal?
A. I would agree it was very abnormal. I would not agree it is standard practice not to believe it. By all means

repeat it, but believe it in the meantime.
MR STITT: 222-002-005, Dr Scott-Jupp is the paediatrician.
THE CHAIRMAN: We're repeating ground we've been over.
MR STITT: I don't know if the witness is aware --
THE CHAIRMAN: Here's the point: this witness has given his view on this point. He does not need to be asked to respond to the way in which each other expert has described what they would have done or what they think is a point of criticism or not. It seems to be unnecessary to take time to go through, "This is precisely what Mr Foster said, precisely what Dr Scott-Jupp said", when the witness has seen the other reports and he is expressing a different view, unless there is some particular point to be gained from it.
MR STITT: That's reasonable. I know Ms Anyadike-Danes has done that from time to time and you have made that same observation, so I'll take that and leave that point --
THE CHAIRMAN: Thank you.
MR STITT: -- with one further rider to that. And that is: When we look at the third report from this witness -- and could this be pulled up, 220-003-016? The bottom paragraph is headed, "The management of Raychel when she had a seizure". And could 017 -- could you go back to the full page?
THE CHAIRMAN: Which page?

MR STITT: 016 and 017.
THE CHAIRMAN: If you could give us the two together, please.
MR STITT: This is the witness's opportunity, having read all the statements and so on in the January 2013 report, to summarise the view and it doesn't appear from these two pages that that is a strong issue of disagreement or criticism.
THE CHAIRMAN: I've just been over this. Dr Haynes has just said a few moments ago -- and let me repeat it -- that he is very hesitant to offer criticism on what happened from 3 am onwards.
MR STITT: Yes, he did, but he's still on record saying that he strongly disagrees in relation to this and he hasn't resiled from that. If he wishes to resile from that, then that's the end of the point, but he hasn't made the point in his own report, but he is still on record as saying that he strongly disagrees.
THE CHAIRMAN: About not going [OVERSPEAKING] --
MR STITT: Yes, so it's quite a fundamental point to the doctor in question, Dr Trainor. One would have thought if it was that important, it would have been in the record.
THE CHAIRMAN: Had you considered the issue of going for the second blood test rather than as something that you

wouldn't have done?
A. I stand by what I've said, that it would have been entirely appropriate to act on the first sample and that corroborating it with a second sample whilst you're acting on the first sample is a perfectly reasonable course of action.
THE CHAIRMAN: Thank you. Sorry, did you manage to hold in your head the point that I asked you to hold?
A. No.
THE CHAIRMAN: I'm not surprised. Okay, Ms Anyadike-Danes, do you have anything further?
MS ANYADIKE-DANES: Just to be clear -- because I think there might have been some over speaking at the time -- did you say that you did not disagree that you might have a second test done, but you would simply act on the first test?
A. Yes.
Q. Thank you. The point I want to ask you about is, round about this 5 o'clock time -- I don't have the timeline in front of me -- Dr Nesbitt also arrives and Dr Nesbitt is the consultant anaesthetist, paediatric anaesthetist. So you have in that room the consultant paediatrician, the consultant anaesthetist and, from the surgical team, the most senior is Mr Bhalla, the registrar. So if you're there as the anaesthetist and you are treating

Raychel and, at some point I presume somebody in that room or more than one are reaching a view as to what is to be told to the parents, and in fact we know that Dr Nesbitt accompanied Raychel to the CT scan and he ultimately went with Raychel to the Children's Hospital. From the point of view of the consultant anaesthetist called in those circumstances, would you want to speak to the consultant surgeon, either the consultant surgeon on call or Raychel's consultant surgeon?
A. Yes. If you look at the personnel involved, Dr Nesbitt was clinical director at the time. I don't think he was even on call, he just was enlisted because he happened to be helping out because it was busy. And he went on to be medical director of the Trust. And it comes down to a question of responsibility. Mr Gilliland was the named consultant responsible for Raychel when she was admitted and immediate responsibility for her was passed on when he ceased being on call on the Friday morning to a second consultant surgeon. And even if the consultant surgeon was able to attend and couldn't contribute anything, it's still a consultant surgeon whose name is on the case notes, whose name is at the end of the bed, with who responsibility for Raychel's care ultimately lies, and I think, if nothing else, a senior surgeon responsible at that time or the primary consultant

should have had the opportunity to attend and certainly be informed of events in a timely manner.
Q. Thank you. Those are my questions, but there's one question I have been asked to put to you, and that relates to when Raychel is being transferred to the Children's Hospital.
I wonder if I could pull up two pages from Mrs Ferguson's first statement to the inquiry? It's witness statement 020/1, pages 19 and 20. Under the section "Transfer to RBHSC". The question to her is:
"Did you seek or obtain any explanation for Raychel's deterioration? If so, who spoke to you about this and what were you told?"
The answer she gives is:
"When we arrived at the Royal, Dr Nesbitt was getting back into the ambulance and seemed to us to be in a hurry to get away. He told us that Raychel had a comfortable journey and that there was plenty of movement, which was a good sign. I took some comfort in this."
From what you have described, we went through that timeline in terms of her diminishing, so far as you could tell, brainstem function until we get to the point at 5.05. This is a much later period when she's being transferred, it's probably about 11 o'clock, somewhere

thereabouts. What kind of movement would you expect Raychel to be capable of at this stage?
A. If Raychel by this point in time, as I am unfortunately convinced was brainstem dead because of cerebral oedema at this point, if that is a correct statement, the only movement that she would have been able to make would have been reflexes that involved surgery of the spinal cord. She would not have been able to make any purposeful movements, she would not have been able to breathe. There would have been no reflexes that involved neural impulses passing through the brainstem. The reflex arc between the sensory input to the spinal column and the muscles that rely entirely on a single reflex that doesn't involve the brain and the brainstem will still function in a patient who's brainstem dead. So there may have been a movement in response to a tendon stretch or something like that, but --
Q. Is that in any way a good sign?
A. No. It can be interpreted falsely as signs of purposeful movement, but it is a purely reflex arc that doesn't involve the brain.
Q. At that time Dr Nesbitt was a consultant anaesthetist and he was there in that room and saw, so far as we're aware, the CT scans. Would you expect a consultant anaesthetist in those circumstances to have taken any

comfort from that kind of movement at or about 11 o'clock or so?

A. I find the statement a little surprising.

THE CHAIRMAN: So when you say it could be interpreted falsely as a sign of purposeful movement, it would be interpreted falsely by a non-medic?

A. Yes.

THE CHAIRMAN: Thank you.

MS ANYADIKE-DANES: Mr Chairman, I don't have anything further.

MR QUINN: I have just one point to make. In relation to Dr Gund, would it be normal for him to speak to the parents before he carried out any anaesthesia on Raychel? The point being, the parents were told that he would come and speak to them, but in fact he never did, and Dr Gund in his evidence seems to be saying that he did speak to Raychel. Would that be appropriate or would it be much more appropriate to speak to the parents?

THE CHAIRMAN: Did he speak to Raychel on the ward?

MR QUINN: I think that was his evidence from recollection.

THE CHAIRMAN: Was that at a point when the parents had left because --

MR QUINN: They had left.

THE CHAIRMAN: There's an issue, doctor, that the Fergusons

thought that they had signed a consent. Their understanding of the consent they signed for the operation was that it was an "in case" consent that Raychel might not need to be operated on, but in case she did, they signed a consent. They left Altnagelvin then late on the Thursday evening and Dr Gund went to see Raychel before the operation. Mr and Mrs Ferguson weren't there, for the reason I've just explained, and he spoke therefore only to Raychel. The fact that he went to the ward to speak to Raychel and her parents would, I assume, be the norm before the operation?

A. Yes.

THE CHAIRMAN: So if he then found that Raychel was on her own and her parents weren't there, does the question become whether he should have waited for them to return before anaesthetising Raychel and proceeding or does this sound like a bit of a mix-up?

A. Ideally, yes, but it depends what other duties he had to fulfil in the intervening time.

THE CHAIRMAN: Right, okay. So the fact that he went to the ward is an indication that he's on the right track?

A. Yes.

THE CHAIRMAN: Right, okay.

MS ANYADIKE-DANES: Sorry, Mr Chairman, there was one further one; it arose out of Mr Foster's evidence, and

I beg your pardon, I should have mentioned it before.

Mr Foster was dealing with the -- you will know from his report and that of Mr Orr that both of them thought that wait and see might have been appropriate in relation to the surgery and Mr Foster was dealing with the opportunities for wait and see. His view was that before Raychel went to the surgery, there was a further opportunity for Mr Makar to examine her and decide, much in the same way as you remarked on her symptoms, the extent to which they had been alleviated and whether it was still necessary to go on to surgery. And he expressed some surprise that the next time Mr Makar saw Raychel, she was already anaesthetised and therefore that, as he regarded it, that opportunity was lost. In your experience, how common would that be that the child would already be anaesthetised before the surgeon got to theatre?

A. I'm not entirely sure what question you're asking, but I'll answer what I think you're asking. The face value question seems to be: is it appropriate for Dr Gund to have anaesthetised Raychel before the surgeon showed his face in the operating theatre.

Q. That's one.

A. I'll deal with that first. If Dr Gund knew that Mr Makar was available to do the operation within the

next short space of time and was on his way, I would view that as perfectly reasonable.

Q. What in fact happened, apparently, is Mr Makar was bleeped to come to theatre and, as I understand the evidence, Raychel was already anaesthetised.

A. It depends what message Mr Makar had left with the theatre staff. He may have said, "We're going to proceed with Raychel's appendicectomy, please call me when she's in theatre or ready".

Q. And if that was the case, that to you would be entirely, if not normal, not unremarkable?

A. Unremarkable. Perhaps not ideal, but not worthy of specific criticism.

Q. And how often would that happen in your experience?

A. It depends on how well individuals know each other and how well they work as a team. I think in this case they may never have worked together before.

Q. What's the significance of that?

A. It's one of trust between colleagues. If you're working with an individual who you trust, know who's in the hospital, whose judgment you're happy with, then it is entirely appropriate to proceed. If you're working with someone who you've never worked with before, you have no idea how long it's likely to take to show up after he has been contacted, has he in fact examined Raychel

again, is he meant to, then it's not entirely appropriate.

MS ANYADIKE-DANES: Thank you.

THE CHAIRMAN: Mr Stitt?

MR STITT: Nothing, sir.

THE CHAIRMAN: Okay. Dr Haynes, that's everything. Thank you for coming back again. Safe journey home tonight, whenever that journey starts.

(The witness withdrew)

Ladies and gentlemen, as you know we were due to sit on Monday to hear Mr and Mrs Ferguson give their evidence and, for rather unhappy reasons, we can't do so. We instead will be sitting on Tuesday at 10 o'clock, Tuesday the 26th. I'm grateful to everyone who has accommodated this change. Tuesday morning.

MR CAMPBELL: We discussed that it might be wise to start at 9.30 to ensure we get finished.

MR QUINN: We have no objection. I have checked with Mr and Mrs Ferguson. We don't want to run into time trouble, so perhaps that would be a good suggestion.

THE CHAIRMAN: Yes. 9.30 on Tuesday. Thank you.

(3.23 pm)

(The hearing adjourned until Tuesday 26 March at 9.30 am)

I N D E X