SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
19 August 2024

Day 25
27 September 2024
Dr Emilia Crighton

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10:03

THE CHAIR: Good morning. Now, I think we're ready to resume with Dr Crighton.

MR MACKINTOSH: Yes, please, my Lord.

THE WITNESS: Good morning.

THE CHAIR: Good morning. Would you like to sit down?

THE CHAIR: Dr Crighton?

THE WITNESS: Yes.

THE CHAIR: Now, as-- Right.

THE WITNESS: Short legs.

THE CHAIR: Is that a comfortable height?

THE WITNESS: Yes, thank you.

MR MACKINTOSH: If you want to lift it, you can, there's a lever.

THE CHAIR: It's----

THE WITNESS: It was putting it down so my feet touched the ground.

THE CHAIR: All right. Okay. Are-- Right. Comfortable?

THE WITNESS: Yes, thank you.

THE CHAIR: Dr Crighton, as you appreciate, you're about to be asked questions by Mr Mackintosh, who's sitting opposite to you but, first of all, I understand you're willing to take the oath?

THE WITNESS: Yes.

Dr Emilia Crighton

Sworn

THE CHAIR: Now, I don't know how long your evidence will take. I anticipate probably all of the morning, but we've just scheduled the morning for your evidence. We'll take a coffee break at roughly half past eleven but, if you want to take a break at any other point, give me an indication and we'll take a break.

THE WITNESS: Thank you.

THE CHAIR: Mr Mackintosh.

Questioned by Mr Mackintosh

Q Thank you. Good morning, Dr Crighton. I wonder if you could just state your full name and your current occupation.

A My full name is Emilia Mihaela Crighton.

Q And what's your current occupation?

A My current occupation, I'm the director of public health in NHS Greater Glasgow and Clyde, consultant----

Q Thank you, and did you produce a written statement for this Inquiry?

A I beg your pardon?

Q Did you produce a

written statement for this Inquiry?

A Yes, I had.

Q And are you willing to adopt that as part of your evidence?

A Yes, please.

Q Thank you. Now, what we try and do is to pick up issues that arise in your statement, effectively by working through it but without reading it out. So, just as the current director of public health, when did you take on that role?

A I have taken the current role of director of public health in January 2022.

Q 2022, thank you. Now, we've heard a lot of evidence and received a lot of written evidence about you taking over the chair of a gram-negative bacteraemia IMT on 23 August 2018. So, before I ask you questions about that, I'm just keen to understand a little bit more, the connection between public health and Infection Prevention and Control and the use of IMTs as they operate in public health, just to get some context. So what is the connection, in your mind, between public health and Infection Prevention and Control in hospitals?

A Public health has a duty towards the population, the health of the population irrespective of its facts, and probably you have heard from my colleagues that public health discipline is fairly wide and health protection is one aspect of public health practice, and it's a core aspect of public health practice.

Q So, you consider Infection Prevention and Control to be almost part of public health?

A It is one way in which the health of a population is protected against infection.

Q Thank you. Now, we've heard a lot about IMTs in the context of the hospital being operated within the context of, I think, section 3 of the National Infection Prevention and Control Manual and, within your statement, you talk about a document called "The Management of Public Health Incidents" by NHS-led management teams, which is helpfully abbreviated as "MIPI." What are the connections between these two documents and are there any practical differences in the way that IMTs are run in hospitals as opposed to wider in public health?

A I'm not entirely aware of how the differences in operating an Infection Control within the hospital should operate in a different way. Ultimately, the aim of an incident is to actually bring under control the

incident and make sure that we bring it to an end, find solutions and prevent further adverse events.

Q Now, what was your experience of infection management teams in hospitals prior to 23 August 2019?

A I have not worked with infection management teams within hospitals.

Q All right, now----

THE CHAIR: Sorry, I didn't catch that.

A I did not work with infection management team within a hospital.

Q Thank you.

MR MACKINTOSH: So, I wonder if we can go to your statement, to paragraph 9 on page 231 of the statement bundle, and you describe in this paragraph how, on 22 August, you were asked by your line manager, Dr de Caestecker, then the director of public health, if the next day you could chair the IMT meeting on gram-negative bacteria.

Now, what I would like to understand is how did this request come to you? Was it a phone call or an email or was it a person-to-person meeting?

A It was a phone call I received from Dr de Caestecker and there was an email as well.

Q And I'd like to understand what you were told in the phone call and the email taken together. So, in a sense, the-- I'd like to capture what you were briefed about this IMT you were going to chair the next day, and so I thought I might do that by asking a few questions and then see if there's anything else that I haven't asked about. So the first question is whether you had been told about the previous six IMTs and what had been happening in them since 25 June when they started.

A So, first of all, my recollection was a telephone call from my line manager advising that we have been asked in public health to support-- by Dr Jennifer Armstrong, to support taking over the IMT because there have been issues and, in the subsequent email, it was more detailed. I would need to go back to the email to detail what they were. In terms of the previous IMT, I was aware that there were a series of IMTs but we didn't go into the detail of that.

Q Before we get to what was in the email, at any point, did you receive the minutes of the previous IMTs before 23 August?

A Not at that time, no.

Q No. Did she, in the

phone call or in the email, tell you who the current chair was who you were replacing?

A I do not recall that. I beg your pardon. Dr Inkster, I think, was-- if I remember correctly, was unwell and off.

Q So, you were told that Dr Inkster was off sick?

A Yes.

Q Were you given a reason for why you were taking over as the IMT chair?

A I was given the option of covering for Dr de Caestecker in one of two meetings that she was doublebooked the following day.

Q Could you explain that? I thought you were asked to chair the IMT?

A It was chair the IMT or attend a drugs meeting she was doublebooked into.

Q So did she actually ask you to chair the IMT or did she give you a choice?

A She was giving me a choice.

Q Why did you select the choice of chairing the IMT?

A I can't remember exactly.

Q What did she tell you in the email? In fact, firstly, I think, we haven't got your email. So, after today, I'd be obliged if you would pass it to the solicitors for the Health Board and we will seek to recover it from them. I'm slightly surprised we haven't got it already but we will get it from you. What did she tell you in the email about the IMT and what you were to do?

A I think the email simply said that there had been some problems with the running of the IMT and that's why we were asked by Dr Armstrong but I will produce the email as I cannot----

Q Yes, can you remember what these problems were?

A No, I can't remember.

Q Did you know at the time you went into the meeting-- or rather did you know at the time you went over to the building where the meeting was located, what the problems in the IMT were?

A No.

Q Had you been told anything about why the previous IMT chair was unavailable other than that she was sick?

A No.

Q So, the position was, you explained earlier on, that you were told she was off sick?

A Yes.

Q Were you given an

indication of how long it was that you would have to chair this IMT for?

A No, I wasn't.

Q We've had various explanations-- Well, before we get to that, what is the role and purpose of an IMT chair in a meeting, as opposed to chairing the team as a whole?

A In terms of chairing the meeting, an IMT meeting as any other meeting, is to ensure that there is appropriate input from all participants to the common purpose of finding solutions to the incident and successful resolution.

Q We've heard some evidence that sometimes, if it's not possible to reach a consensus in the IMT, it's the duty of the IMT chair to make the decisions when consensus can't be found. Is that something you would agree with?

A There are times when decisions can be taken. However, I alluded in my statement, when there are complex situations, it might be that we need to reconvene to bring additional information or investigations, so it's not necessarily straightforward in taking decisions.

Q I appreciate that but I think the point I was pressing you on was that we've heard some evidence from a number of different witnesses that an IMT chair should normally be trying to produce a consensus decision but that, if it's not possible to reach a consensus decision, ultimately, it's for the IMT chair to make the necessary decisions to take forward the investigation and the actions to protect the patients involved. Would you agree with that?

A I agree with that.

Q Yes. So, before we get into what happened at the meeting, I'd like to understand how you planned to be able to do that if, at the meeting, there wasn't a consensus without any pre-briefing in advance about the substance of the meeting or indeed holding copy of any of the minutes.

A Can you repeat the question?

Q So, you were going to be chairing a meeting that had had some previous meetings, there were some issues, you can't remember what the issues are, and you've accepted that, when a consensus can't be reached, it's ultimately for the IMT chair to decide what to do. I'd like to understand from you how you thought you would do that without copies of any minutes beforehand or indeed any briefing before you walked into the room.

A Perhaps casting and

bringing my understanding, my understanding is we do have teams that come together to solve complex problems. The chair is there to facilitate that. It's not necessarily that I would need to come with a final answer by the end of the meeting. With the incidents, there is usually a series of meetings whereby understanding evolves, where the solution would emerge following the investigations, and we need to have the open-minded approach and bring whatever is required.

So it's not one meeting that we'll come with an understanding. So there are small meetings where that can happen but, by and large, particularly from previous experience, you have to have a series of meetings whereby you bring the outcomes of investigations. You allow different opinions to be brought to the table. You allow discussions. You allow considerations, and sometimes you just simply need to go to the next step.

Q I'd like to look at the minutes of the IMT, which is bundle 1, document 78, page 348. Now, before we talk about what happened at the meeting, I'd like to understand, other than Dr de Caestecker, did any other member of the IMT or Dr Armstrong speak to you before the meeting about what was to happen at the meeting?

A There has been a pre-meeting that, unfortunately, because of the timelag, I cannot remember, but I had been briefed as a chair in terms of the broad lines of investigation. Unfortunately, five years ago, I cannot remember the detail.

Q So----

A As any chair, and my experience from chairing other meetings, I usually get briefed in terms of the key points.

Q Who gave you the briefing?

A Whoever was at the meeting but probably Sandra Devine I remember being there.

Q At this pre-meeting, do you remember whether anybody else other than Sandra Devine was there?

A I'm afraid I can't.

Q Was Professor Steele there?

A I'm afraid I cannot remember.

Q The reason I need to press you is because we have evidence that none of the treating clinicians for any of the patients were in the pre-meeting. Is that something you remember?

A I clearly said-- It is a blur. I remember arriving there and I

can't remember the content.

Q Dr de Caestecker(sic), 25 days later, this public inquiry was announced. I want to be clear that, even though 25 days later a public inquiry was announced, you didn't make notes or attempt to remember what had happened at this meeting and you just can't remember the pre-meeting at all. Is that your position?

A I cannot remember the pre-meeting as the pre-meeting was a briefing in terms of following through the IMT.

Q Is a pre-meeting involving only some members of the IMT something that is anticipated within section 3 of the National Infection Control(sic) Prevention Manual?

A I don't know.

Q We've had evidence that before the-- at the time the meeting was due to start, which is ten o'clock in the morning, on the Friday, a number of the people who are recorded as attending, including Professor Gibson and Dr Murphy and the other treating clinicians, the representative of HPS, Ms Rankin, Dr Inkster, and I think the minute taker, and possibly some of the Estates people arrived at the meeting room to find the pre-meeting still going on. Is that something you recollect?

A I'm afraid I can't remember.

Q They were surprised that there was a pre-meeting because there had never been a pre-meeting at an IMT in the hospital that they remember. Is that something that you know about?

A No, I don't.

Q The pre-meeting ran on. Is that something you remember?

A I don't.

Q They noticed that within the pre-meeting were some of the more senior members of the Board's employees in the pre-meeting because they could see them through the window. Is that something you'd agree with or disagree with?

A I'm afraid I cannot remember.

Q Okay. Before-- At the briefing, did Sandra Devine explain any of these things to you or did anybody at the pre-meeting-- sorry, not Sandra Devine. Did anybody at pre-meeting explain to you any of the following things? I'll just take you through them and you can give me a yes, a no, or, "I can't remember". So, for example, did the explanation or briefing include that Dr Inkster had agreed to the change of the chair?

A Can't remember.

Q Did the briefing include that Dr Inkster agreed to be replaced in order for her to have time to review the incident results and actions? Is that something that you were briefed on?

A I can't remember.

Q Was it explained to you that Dr Inkster was asked to demit a week beforehand due to feedback from everyone at the last IMT on 14 August that the meeting was difficult? Is that something you were briefed on?

A I can't remember.

Q Were you aware before the start of the IMT that a meeting had taken place three days before, on 20 August, chaired by Dr de Caestecker of which some of the people present at the IMT, including Dr Armstrong, had discussed the IMT and decided to replace Dr Inkster as chair?

A I had not been briefed.

Q Were you aware of that?

A No, I was not aware.

Q Did you subsequently become aware of it?

A The first time I came across was in my bundle of documents that----

Q So, no one's told you about 20 August?

A No.

Q No. There is some suggestion in correspondence that – and indeed some evidence of one of the witnesses, Ms Rankin – it was reported that Health Protection Scotland had approved of the change of chair, or that Health Protection Scotland had indicated that it was appropriate for a public health consultant to chair the IMT. Is that something you were aware of before the IMT started?

A I do not recall and all I can recall is that that has happened within the meeting itself.

Q And your source, is that-- is your memory or the minutes?

A It's the minutes because I recall the challenge from-- at the beginning of the meeting and the reassurance that the role of a consultant in public health in taking over the IMT has been endorsed.

Q Thank you. Well, we'll come back to the challenge in a moment. Did you, before the meeting started, seek to obtain a handover or narrative on all the environmental issues in the history of the water system of ventilation and the IMT and Dr Inkster as your predecessor?

A Are you-- If you can be more specific, is that within the pre-meeting or----

Q No. Between the time

that you were asked-- Sorry, between the time that you volunteered to take on the chair because you were given the choice and the start of the meeting, did you attempt by email or telephone to contact Dr Inkster for a briefing?

A No, I hadn't, as I had been advised she was off sick.

A Do you know whether any of the treating clinicians were advised before the meeting started that you would be taking over the chair?

A I do not know.

Q Do you know whether HPS were advised before you started the meeting of whether you were taking over the chair?

A I do not know.

Q Now, let's go to your statement. If we go to your statement, please, to the page we were on before, yes. Let's go to paragraph 10. So, in your statement, you explained that the previous IMT chair attended the meeting. Now, given that you had been told she was off sick, how did you react to that?

A I was pleasantly surprised to see her there, but I wasn't entirely sure and it wasn't the time or place to actually go into the details with-- or asking Dr Inkster.

Q So, why couldn't you, for example, have delayed the start of the IMT to speak to Dr Inkster before the meeting started?

A I do not-- I do not recall.

Q Well, let's press you on that. So, you attended a pre-meeting. Now, you can't remember the pre-meeting, but the witnesses who speak about it from outside the meeting, and indeed, one of them who was present in the meeting, speak to the pre-meeting running on, so that the start of the IMT was delayed. There had, therefore, been a delay already. When was the first time you realised that Dr Inkster was there?

A When the introductions were made, as I didn't-- I had never met Dr Inkster before.

Q At that point, did you not consider the possibility that it would be respectful to Dr Inkster to stop the meeting and to go and speak to her privately and find out what she understood had happened?

A I'm sorry, but I can't remember.

Q Well, I'm not asking you to remember; I'm asking you, think now about whether that was respectful to Dr Inkster to continue the meeting, in no knowledge of what she was thinking about the meeting you had replaced her by the chair when you

have been told she was ill. So you've been told she was ill.

A Yes.

Q She was clearly not ill anymore. So that's a good thing. That's an improvement. She stopped being ill overnight and you've had a pre-meeting, you've been briefed and suddenly she's there. Was it respectful by you personally to Dr Inkster as a fellow clinician to continue the meeting at that point?

A I welcomed her to the meeting and she was going to contribute to the meeting. As it's been briefed is that-- The meeting was briefed that the discussion has happened with Dr Inkster and I took it at face value.

Q What were you told in the briefing about the discussions with Dr Inkster?

A I can't recall.

Q Because there's an inconsistency here, Dr Crighton. You were told on the 22nd that she was off sick. You were told at the pre-meeting, you've just said, that you were briefed on the discussion with her, and you've told me that you were surprised to see her there and you were pleased to see her there. Those all can't be true because if you were surprised, you obviously were told she was still off sick at the briefing or that was assumed. We'll go through that again. You'd agree that you were told on the day before that she was off sick?

A Yes.

Q You just told me that at the briefing you were told of her previous involvement and why she wasn't going to chair the meeting anymore. You just said that.

A Sorry----

Q What were you told at the pre-briefing about Dr Inkster?

A I cannot recall anything about the pre-briefing.

Q You just said you were briefed.

A The briefing was in the meeting itself.

Q Yes, you said that you were briefed already at the pre-meeting about her previous involvement. Is that correct? You've just told me that after I asked you whether it was respectful, you said you were pleased to see her because she would take part in the meeting. You then said to us that you had been briefed about her involvement at the pre-briefing. I'd like to understand what you were told about her previous involvement at the pre-briefing.

A Sorry, it was during the

meeting itself.

Q So we should understand that you were told about her previous involvement in the meeting itself. Is that what we should understand?

A Dr Inkster has been the previous chair.

Q Yes.

A I was told she was off sick.

Q Yes.

A Within the meeting itself, it was disclosed that a discussion has happened with Dr Inkster by Sandra Devine.

Q But that wasn't before you-- the moment when she-- So, you realised she's there before Sandra Devine gives the explanation. Have I got that right?

A Yes.

Q And what I'm wanting to check in with you, get this right, is why at that moment you didn't think it would be more appropriate to pause the meeting and find out from Dr Inkster, rather than doing it in public, what she knew about you taking over and what you needed to know about the meeting.

A I don't know.

Q Well, it's not a question of whether you know Dr Crighton, it's what you think because you're a clinician of many years experience and so is Dr Inkster. You've been told something, that she's off sick, which is now either no longer true or wasn't true, but the important thing is she's now here, in the room, in a meeting which you are chairing. Do you not need to make sure that she knows why you're there?

A My recollection is the way the meeting run was, there has been the introduction that I had been asked to take as the chair, and the discussion ensued whereby it transpired that there-- or it's been shared with a meeting that there was a discussion with Dr Inkster as minuted in the minutes.

Q I understand that bit, but I'm not focusing on what other people did, Dr Crighton. I'm focusing on what you did.

A I did not take Dr Inkster to one side to ask.

Q Okay. Now, let's look at the paragraph that's on the screen, paragraph 10, the second sentence:

> "During the meeting I witnessed a quite hostile tone of challenge from a senior clinician and Annette Rankin, HPS representative, towards Sandra Devine when she advised the

group about the background to seeking a new chair and the advice previously received about the IMT being chaired by a consultant in public health medicine"

Now, what I want to understand is why you think there might have been a hostile tone of challenge to that information. Can you think of why there would have been a hostile tone of challenge?

A There have been many tensions I had witnessed and the change of chair, the different opinions, the frustrations with having a new chair that by clinicians was a different person, the fact that there hasn't been a solution.

Q Because the thing that I'm concerned about, Dr Crighton, is that at this moment when you say you witnessed a quite hostile tone of challenge, you don't know the way the meeting is being conducted because you'd not been to it before, do you? You later discover that other people have different opinions. You learn that Annette Rankin will, in about a month's time, not agree with a decision that the IMT is to make. You realise that Professor Gibson might-- and other clinicians will write a letter to the medical director about the progress in the IMT.

All that is to come, but at that precise moment you just hear the hostile tone and what I want to understand is, at that moment, could the explanation have simply been that they had no idea what was going on and they felt that you were being parachuted in to an IMT in somewhat surprising circumstances? Could it have been as simple as that?

A I don't know, but it is possible, as we were all kind of in a situation whereby it wasn't clear what was going on.

Q Well, you were clear what was going on because you'd just been briefed by Sandra Devine. They weren't clear what was going on because they didn't know. You were telling them at that moment and Sandra Devine was telling them. So could it be that the challenge, if that's the right word, is coming from people who are surprised and somewhat perturbed by the turn of events? Could it be that?

A It is possible, yes.

Q In the pre-meeting, are you able to help us about whether Ms Devine had explained to you the different perspectives of the different members of the IMT in the previous tensions?

A I would love to, but I can't remember.

Q We'll have to ask her. Do you feel at that moment, or did you feel at that moment that you understood the context of what was going on?

A At the very beginning of the----

Q At the moment you detected the hostile tone, do you-- did you understand the context of what was going on?

A Not on the-- in the moment, no.

Q No. Would it not have been better if you'd been-- had the opportunity to read the minutes and to obtain a briefing from other people, including other members of the IMT, maybe even the treating clinicians, in a pre-briefing? Would that not have helped?

A Within the meeting itself, part of that, it would have been the emergence of the current situation.

Q In the initial moments of the meeting, did Ms Rankin ask for an assurance that due process had been followed?

A She did.

Q Did you know whether due process had been followed?

A Sandra Devine reassured Ms Rankin of that.

Q Did she tell you what process had been followed?

A No.

Q Because you didn't know about the meeting on 20 August, did you?

A No.

Q No, and so, in a sense, is it simply that Ms Devine gave an assurance that there was a clear decision-making process and that was it, or was there detail?

A That was it.

Q The next paragraph in your statement records, you notice:

> "The clinicians' challenge and frustration about the collective inability to stop new infections and the express need for a safe environment to treat high-risk patients..."

And you say that you took this:

> "...as a sign for their deep care for the welfare of their patients and the strong desire to bring the incident under control."

Could it be that some of the challenge and frustration was related to the way they and the chair of the IMT were being treated?

A You would need to ask the clinicians.

THE CHAIR: Sorry, I didn't catch that.

A You would need to ask the clinicians.

MR MACKINTOSH: Well, we've had some evidence from the clinicians. I'll come to that in a moment. You mention in paragraph 12 your experience in chairing IMT meetings. In the third sentence, the fourth line, you say that:

> "Enabling respectful civil deliberation is essential to the working of a group and the ability to make sound decisions, especially when working in complex environments."

Do you think that at that moment you, as chair of the IMT, were enabling respectful civil deliberation by the way you arrived with no warning and took over as the chair?

A Can you elaborate, please?

Q So, you arrive, you volunteer to chair this. I suspect you're now wishing you took over the drug meeting instead but you volunteer to chair this meeting. You receive a briefing from Sandra Devine. You arrive and there is a hostile tone from some people. Have I got anything wrong there so far? Isn't it all right so far? I'll go back. So, you took over the chair as a volunteer. Is that correct?

A Yes.

Q Right.

A Yes.

Q The only briefing you received was an email from Dr de Caestecker and a phone call and the pre-briefing where Sandra Devine told you things. Is that right?

A Yes.

Q Yes, and you didn't have the minutes?

A No.

Q No, and you took over the chair and there in the room is the previous chair. Do you consider that those circumstances taken together enabled at that moment respectful and civil deliberation?

A It could be strained, however, there were many things that I wasn't aware and they emerged later. So, setting up the tone and ensuring participation into the meeting was a way to reach the-- conduct the meeting.

Q Because the issue that I have to press you on, Dr Crighton, is that you are not responsible for what happened at the meeting on 20 August. You were not there. You didn't even know about it. You were not responsible for what happened in

the previous meetings. You were not there. You didn't take one position or another position. You arrived at this meeting, but, at that moment, are you not responsible for your own actions as a doctor?

A Yes.

Q Yes. Looking back on it now, could this have been handled better?

A Absolutely.

Q How would it have been handled better?

A In an ideal world I would have had the discussion with Dr Inkster or with everybody else to ensure an understanding of the situation, understand and have a handover of the chairing and the notes and ensuring that there was a clear understanding before the meeting of the change of chair.

Q Why do you think that didn't happen?

A I do not know.

Q Okay, well, looking back on it now from today as a perspective, what is your explanation for why that didn't happen?

A My only explanation is the, kind of, speed of developments in terms of moving on with the investigation.

Q So, you feel that the absence of all these ideal provisions is simply because of the time it was done in.

A I can't think of other----

Q Now, if we go back to the minute now, page 350, I'd like to ask you a couple of things about the meeting itself. So, this is two pages-- Well, go back to page 348 for a moment. I want to just check one thing with you. Do you see how the second section is minutes of the last meeting?

A Yes.

Q When were you given the minutes of the last meeting?

A I had received them in the morning.

Q In the morning, right. Okay. Thank you. If we go on to page 350. So, there's what's called a hypothesis update. The second-- third paragraph begins, "Dr Kennedy." You see that there?

A Yes.

Q Now, we have a statement from Dr Inkster, and she's due to give evidence next week and, for the purposes of my colleagues, she discusses this at paragraph 902 of her statement, but I'm not going to take you to it. What I'm simply going to observe is that in the meeting, and we see a sentence, the second sentence

of the minute:

> "Within his epidemiology, you can see patterns which are similar to the old Yorkhill Hospital."

Now, that's recorded in a minute. I wonder if you recollect him saying that.

A I do.

Q Yes. Dr Inkster indicates that-- she would have indicated that-- she indicated that the water quality at Yorkhill was very poor at the time, and it may be because of the high Legionella counts it had, it wasn't an appropriate comparator. Is that perhaps something you remember being discussed at the meeting?

A No.

Q Is that because you can't remember the discussion or because it wasn't said?

A I can't remember the discussion but I can see it in the notes.

Q Now, do you see on the sixth line there's a sentence that begins:

> "Dr Inkster has obtained figures from Great Ormond Street Children's Hospital public annual report..."

You see that there?

A Yes.

Q Right. She records in her statement that there was discontent at the meeting, I think, using Great Ormond Street as a comparator, because 6A was a temporary facility. Is that something you remember being discussed at the meeting?

A There were-- I remember discussions in terms of seeking comparators elsewhere and the importance of obtaining an external comparator. Whether Great Ormond Street was or was not the most appropriate one, I cannot remember but, certainly, I was very keen that we had as wide comparators as possible.

Q So, in terms of there being a suggestion from others at the meeting that Great Ormond Street was not a suitable comparator, do you remember that being discussed?

A No, I don't remember that being said that it wouldn't be an appropriate comparator.

Q Sorry, what was the last bit, sorry?

A I can't remember anyone saying that it wouldn't be an appropriate comparator.

Q Thank you.

A Actually, the fact that we were going to visit Great Ormond Street showed that we were very keen

to understand.

Q Did you eventually go to Great Ormond Street?

A I didn't, no.

Q Did a visit take place?

A The Facilities colleagues visited Great Ormond Street.

Q Did the Infection Prevention and Control team visit Great Ormond Street?

A I don't know.

Q What I'd like to do now is to move on to think about the remaining IMTs you chaired until 14 November, which is your last one of this sequence. What I want to understand, first, can we take that off the screen, is why did you stop chairing the IMTs after 14 November?

A 14 November was the closure of the episode in relation to the restrictions to new admissions on ward 6A. So it was the end of the incident itself.

Q The end of the IMT event.

A Of that specific one.

Q Now, if we can go to your statement, please, at paragraph 20, page 233, there's a discussion of the case definition. Do you agree with that case definition and, therefore, as a consequence, that the focus of the IMT should be on the hospital

environment?

A Case definition is the type of patients that would be included in the investigation. Therefore, the focus is understanding where-- or investigating for each individual case, where the source of infection could have been acquired. So the focus of a case definition is the person, and the focus of investigation is looking at the circumstances, all the circumstances, where an infection could have been acquired by the person.

Q Okay. In this context of these meetings that you chaired, they came after many other IMTs over the previous 18 months and I'm assuming you're aware of those?

A I am aware.

Q And did you, at the time, perhaps in late-August, early-September, have a clear understanding of what was thought to be the issues in the previous IMTs, the ones the previous summer, what's known as "the water incident", and then the gram-negative in 2018, and the Cryptococcus IMTs in the winter of '18/'19? Had you, sort of, investigated those and understood what those had been looking at?

A I had been briefed by Dr Kennedy in terms of the previous incidents, and particularly the

hypothesis that there has been incidents of infection linked particularly to the water. So it was particularly the environmental type of infections among haem-oncology patients.

Q Had you considered after the meeting of the 23rd obtaining a briefing from Dr Inkster?

A I relied on Dr Kennedy's briefing.

Q Why?

A Perhaps because of the fact that we were co-located in the same offices.

Q Because Dr Kennedy hadn't attended all the previous IMTs, had he?

A While the previous incidents had happened, there had been documentation, the focus on current investigations had to be taken, per se, and ensure that we carry out the investigation for the current cases.

Q Would you agree or disagree with the statement that the issues that faced the IMT in August 2019 could only really be understood in the context of what had happened to the water and ventilation systems and the ward locations in the previous 18 months?

A The location of the ward when I took over was in a different part of the hospital. Therefore, I understood that the issues that were relevant before had been dealt with and there had been controls in place to address those issues. Therefore, there might be some element of previous issue or there might have been completely new issues and we had to ensure that we have taken all elements-- or considered all possibilities into account.

Q What was the differences between the domestic water system as operated in Ward 6A in August 2019 and the water system as operated in Ward 2A immediately prior to its decant?

A My understanding from the meetings had been that there had been controls put in place through chlorine dioxide point-of-use filters to ensure that there is protection of the haem-oncology patients.

Q Were there point-of-use filters in place in Ward 2A immediately before the decant in September 2018?

A I do not know.

Q Would that not be an important distinction, if there were or were not? Would it not matter that there were point-of-use filters in 2A in September 2018, and there were point-of-use filters in 6A in August 2019? It's the same point-of-use filters. Would that not be relevant?

A So, it depends what the hypothesis is and, therefore, in terms of hypothesis and understanding how the infections came about, the hypothesis from 23 August was not just in isolation the water, as there had been controls to address the water.

Q Well, I'll come to the other hypothesis in a moment, but part of the hypothesis, would you agree, was something to do with the water?

A It was the environment. My understanding was that the water, through the point-of-use filters-- so there had been mitigations within the ward itself to ensure that, had there been organisms within the water, that would have been taken off.

Q Were there organisms still within the water that were not responding, just possibly, to chlorine dioxide treatment?

A So, my understanding is that there was the treatment itself, the chlorine dioxide and, in addition to that, there were physical barriers through the point-of-use filters, so it was both chemical and physical barriers. Therefore, it was important to look beyond just the water.

Q I'll come onto the other sources in a moment, but in respect of Mycobacterium chelonae, which was an issue in 2019-- Have I got that right? Was Mycobacterium chelonae one of the issues in 2019?

A Yes.

Q Yes, and was it being found in the water before the filters, but not in the water after the filters? We can go to the IMT minutes if it would help.

A It would help to go to----

Q Certainly, right. Well, let's do that. So, I think that probably the one to go is 3 July, so we'll go to page 330. So, this is the meeting-- a few meetings before you took over. Now, I noticed that Dr Kennedy is not present at this meeting, so who briefed you about what was happening in July?

A Sorry, I----

Q Page 330. If you look on the screen, you'll that the copy is there. So, Dr Kennedy is not present, so who briefed you about what was happening in July?

A I haven't been briefed about the specifics of what happened in July.

Q Okay. Well, let's move on down to the bottom of page 332. Do you see there the hypothesis, and there's two described, and the first one relates to gram-negative bacterium? And the second one relates to, the group is working on the assumption it's

due to patients and staff having access to unfiltered water throughout different areas of the hospital, that, effectively, the point-of-use filters in Ward 6A are not protecting the patients when they go elsewhere in the hospital. Was that still an issue when you took over the chair?

A That remained one of the hypotheses.

Q Yes, so it therefore wouldn't matter that there were point-of-use filters if that was an issue?

A My recollection is that the patient pathways have been subsequently mapped to ensure that point-of-use filters were then installed along where this group of patients would attend elsewhere in the hospital.

Q Okay. Now, you explained a moment ago that there were multiple different hypotheses – we can take this off the screen – in-- once you took over the chair. I'd like to think about chilled beams for a moment. Now, had you come across chilled beams before you worked at the Queen Elizabeth Hospital?

A Never heard of chilled beams.

Q And what was the differences between the setup of the chilled beams in Ward 2A and Ward 6A?

A I'm afraid I do not know.

Q There was also a suggestion, was there, that there was possibly microorganisms that shouldn't be there in the chilling-- cooling water for the chilled beams? You're aware of that.

A There were discussions during the IMT, yes.

Q Yeah, so what I'm trying to get-- the reason I've done all this is because I want to go back to the suggestion that maybe it matters what happened in the previous year, that you needed to know the hypotheses, the interventions and the possible connections of the previous infections in order to properly understand what was going on with the current group of infections. Would you agree or disagree with that?

A The members within the IMT would have brought that information to the table at that point.

Q Would you not feel obliged to go and find it out yourself?

A I had to rely on the experts' advice because I'm afraid I do not have any knowledge in terms of physical fabric of hospitals and the details.

Q So, you saw your role as more as the chair than an investigator?

A Facilitating the

investigation, yes.

Q Okay, thank you. Now, do you consider that in the few months after you took over the chair, you sought to understand both sides of the position as to whether or not there was a problem within-- about rates of infection?

A Can you please repeat the question?

Q Do you consider that in that period after 23 August, perhaps through until September, you sought to understand both sides of the "debate", if that's what-- it's the right word, about whether there actually was an issue with excess rates of infection?

A Can you spell the-- both sides?

Q Sorry?

A Can you name the two sides?

Q Well, we understand that ultimately some view was taken that there perhaps was something close to a background or comparable rate of infections, compared to the old hospital in Yorkhill, and other people took the view that the rates were still higher than you would expect or find acceptable.

A So, in any situation, any observed phenomena, you need to ask, is this due to what is normally kind of background? Is that real, is it biases compounding it? So it's part of the investigation, it's understanding what is the current situation, what is the normal expected phenomena, and what is the deviation from that?

Q What do you do where the normal expected rate of a particular microorganism is zero? How do you decide whether something is a problem, epidemiologically, if the rate that you would expect is zero; it shouldn't ever happen?

A So, "should" versus the reality, so it's how do we actually establish what is the background? How do we investigate the occurrence? Is that something genuinely novel? There is evolution in nature, so is there a change in phenomena? So, it's, like, actually what is our expectation? Is that a realistic expectation or is it genuinely a new phenomena?

Q So, how do you do that where the numbers of infections of a particular species are in the ones over years or even decades? How do you work out whether this is, in a sense, just background or something that happens, or something unusual? How do you do that?

A Through thorough investigation, understanding the full

context. So, is there any-- Any infection is the interplay between an individual, the environment, and the environment in the widest possible sense, their susceptibility, the bacterial kind of factors. So it's taking every component into consideration, because there can be genuinely new threats appearing. There is a new virulence, I think that COVID showed us that, the possibility of new things appearing from an agent perspective, but there's something else in terms of how we treat our patients and makes them more susceptible, or there's individual factors. So it's understanding the complexity and interplay of every single part of the chain.

Q The reason I asked you that was because you, if I understood it correctly, were explaining that it was necessary to understand the extent to which there was something unusual going on. Is that not what you were just explaining a moment or two ago?

A So, you do need to understand what's going on in terms of-- So it's looking-- If, for instance, we're looking at new events, whatever they are, it's understanding how does it fit with what has happened before? Is that a kind of circular trend, or is this something that is genuinely new?

Q I want to come back to that, but I want to look at the epidemiology in one block. So what I might do is move on to something else and then return to that very question. Before I do that, do you consider that there was a change of approach within the IMT after you took on the chair?

A As I have not attended the previous ones, all I can tell you is what my approach was.

Q Okay. The reason is that we heard evidence in the Glasgow II hearing last summer from a number of the treating clinicians who attended these IMTs. They were Dr Murphy, Dr Chaudhury and Professor Gibson, and they appear to suggest-- in fact they did suggest, that there was a change in approach, and now Dr Chaudhury gave evidence, and I'm paraphrasing slightly what's in her transcript, that after you took over the chair, the suspicion that there was a problem needed to be proved. Is that something you would accept? Would you accept that your IMT was looking to see if there truly was a problem, or whether this was something that's just to be expected in this patient cohort?

A My view was that we had to identify how we address this, as there is no doubt there were cases of infection, and my view was that we

had to ensure that we had all the processes in place to control the infections.

Q Because Dr Murphy's position, and, again I'm slightly summarising what is in his transcript, is that there was not an acceptance that there was an increased number of infections that we need to be worried about. Would you accept that, that there wasn't an acceptance, on your part as chair, that there was an increased number of infections they needed to be worried about?

A My view is that there were different infections that were not related. Therefore, it was actually understanding how they could have occurred in that particular group. So it was actually understanding whether they were related or not, whether they were from different sources, how they actually converged.

Q Because taking on Dr Murphy's evidence that there was therefore no concern that they were environmentally linked, is that something that you would accept was your position?

A I do not accept that.

Q Okay. Professor Gibson, in her statement, observed that:

"Dr Inkster as chair tried to identify the problem, confirm the hypothesis, consider how it might be remediated. Dr Crighton changed the emphasis to one of positivity."

Is that something you would accept as a characterisation?

A One of positivity?

Q Well, I'm afraid I've not got Professor Gibson-- she doesn't explain in her statement what she meant by that, so----

A I don't know what she means.

Q But would you accept that you were taking a different approach from what she described as Dr Inkster, that Dr Inkster tried to identify the problem, confirm the hypothesis, consider how it might be remediated? Were you taking a different approach than that?

A So, my approach was looking at the old components coming together and taking a full infection chain aspect, having the in-depth patients reviews and looking how they would come together, but that didn't happen in the meeting, so the review of patients was happening outside the meeting. So----

Q So, you had meetings-- you had this, what's it called, the root

cause analysis that you were carrying out?

A So, the root cause analysis was carried by the Infection Control nurses.

Q Yes, by the nurses. Now, is that----

A And the clinicians.

Q Sorry?

A And the clinicians.

Q And the clinicians, and this root cause analysis, is that the process by which, outside the meetings, this was being considered?

A Outside the meetings. So, it was looking into the in-depth circumstances of each person with infection to make sure nothing was missed and look, then, for elements whereby there could have been a common source of infection or a failure in the process.

Q It's probably a good place to ask you, have you had the opportunity of reading the Case Notes Review overview report?

A Some time ago.

Q When you read it, did you see any similarity in the broad approach they took to the attempt-- to the approach that your team were taking in the root cause analysis?

A I'm afraid I read it so long ago I can't remember.

Q Okay. Now, were you aware that, on 30 August-- We can put this on the screen, bundle 6, document 43, page 1416. 1416. With a six, thank you. Yes. Were you aware that, on 30 August, a number of haematology consultants wrote to the chief executive and the medical director, expressing concerns? Did you ever see this letter?

A Not until it was in my bundle.

Q So, you weren't provided with this letter?

A No.

Q Do you see the second paragraph, the second sentence? I'll read it out:

> "A recurring theme of recent IMTs has been questioning of the magnitude and clinical significance of recently documented infections with environmental organisms. Control measures instituted previously have reduced the number of positive blood cultures but those that remain are due to rare environmental organisms, highlighting concerns about the safety of the hospital environment."

Would it not have assisted you to

be told this was a view being held?

A Yes, it would have helped because I would have clearly said that I do not question the clinical significance as each infection has an adverse impact on individuals but we had to ensure, and subsequent action was to make sure that there was nothing in the infection chain that was missed and allowed the infections to occur. So it wasn't just-- The environment is the link between the person, organism, hygiene and everything that comes together.

Q So, I appreciate that you said you wouldn't challenge the clinical significance of these infections. I understand that but would you have been challenging-- questioning the magnitude of these infections?

A So, the magnitude, it comes back to the epidemiology in terms of what is the background, what is expected versus actually-- is that something that actually is expected within the population that are highly susceptible? And every-- It was a well-known fact that they are very likely to acquire infections. So it's actually, where is it within the-- what is the background rate of infections?

Q Okay. We'll come back to that with the epidemiology. If we look over the page, there is a

recommendation-- the request that there should be an external review. Was that something you were aware of?

A It was brought at the IMT.

Q Would it have assisted?

A The IMT notes clearly identified, I think it was Dr Scott Davidson, trying to seek the external input.

Q And was an external review of the cases carried out?

A If I can have a look exactly the----

Q Do you want to look back at the IMT minute?

A No, I'm just looking at the-- There wasn't a clarity in terms of what-- the external review.

Q So, you feel that, at the time it was being suggested, there wasn't clarity in what it would do?

A So, the external review would be essential that we would very much support this, the review. I remember having this-- I remember discussions about what the review would cover.

Q And what sort of things do you think it should have covered? You can take this off the screen now, we're not showing it.

A I think the role of the

clinicians and their understanding in terms of what the review should have been-- covered would have been helpful.

Q Well, yes, but do you have a view of what it should have covered?

A In terms of the external review, coming into an IMT, it's the participation, it's understanding, are there any-- is there any deviation in practice or are there any differences to other units elsewhere in the UK that could explain the phenomena we observed?

Q And did you carry out any investigations as to whether any other haemato-oncology units in the UK had similar rates of infections or different rates of infections?

A I have been very keen that that would happen.

Q But did it happen when you were the chair of the IMT?

A So, the issues were escalated, if you're looking into the history, whereby we have discussed with chief nursing officer and she offered the Health Protection Scotland to be the conduit.

Q Right, because they've given evidence, Ms Imrie-- Dr Imrie, sorry, gave evidence that, in the time they had, she said it was a 10-day window when they produced their October reports, we'll come to in a moment, that she couldn't obtain information from other centres south of the border in the time she had and at the level of detail she wanted. Were you aware of this?

A Yes.

Q Yes.

A I was also aware about the difficulties of actually just simply taking published data or taking-- understanding what happens in other----

Q Well, indeed, and there's clearly obvious problems about understanding what people mean by things they're counting. I appreciate that. My Lord.

THE CHAIR: No.

MR MACKINTOSH: No?

THE CHAIR: No, I merely was adjusting the way I was holding the pen.

MR MACKINTOSH: Sorry, my Lord. Did, to some extent, an external review take place in the case of the Case Notes Review?

A So, that was, following November, yes.

Q So, yes, and from your point of view-- We're going to come to your comments about the Case Notes Review at the end of the hearing, so I

don't want you to think I'm going to miss that out. I'll pick that up towards the end. What I want to do now is to look at the decision that the ward was microbiologically safe and, to do that, I was going to look at the IMT minute, 13 September, which is bundle 1, document 80, page 360, and we see this is chaired by you, and I wonder if we can go to page 361.

And the reason I want to go there-- Sorry, page 362 is the minute recording that, "Senior microbiologists..." top of the page, second paragraph:

> "...Professor Brian Jones and Professor Alistair Leanord had both agreed from a microbiology point of view, in their opinion, Ward 6A QEUH was microbiologically safe at this present time and the IMT members accepted the position."

Could it possibly be that, at that point, the representatives of HPS didn't accept the position, although they might have done later?

A I think the minute records somewhere where those present did not agree with that position.

Q Yes. Now, what I wanted to check out here is, in a sense, the derivation of that.

A The----

Q The derivation, how that comes about, and would the SBAR from 10 October, which follows this, in some way capture the reasons why the ward was seen to be microbiologically safe? We can look at that, which is bundle 4, document 46, page 193. Because, I'll check the context here with you, am I right in thinking that because of the views taken by HPS on 13 September, there was then a process that took a few more weeks before the ward was effectively reopened to new admissions. Is that roughly right?

A There were differences of opinion. Part of bringing individuals together in an IMT in such complex situation is listening to different opinions. There was a clear advice from (inaudible) the ward was microbial microbiologically safe and, while the Public Health Scotland representative-- Health Protection Scotland representatives did not agree, there was separate meetings subsequently and teleconference with Health Protection Scotland.

Q Yes, and does this briefing paper come in that process? Is that what we should see it as, as a document setting out the viewpoint that the ward was microbiologically

safe? Have I understood it, in a sense, correctly?

A Sorry, I would need to look at the----

Q Let's go to the next page and then the next page and then the next page and then the end. One more, I think. One more? Right, yes. So, I want to just check that, from my point of view, looking back on this for five years, that I can legitimately put to you what the interventions were in this document if it-- to see it correctly lists an opinion being expressed that the ward was microbiologically safe. Would that be a fair way to read this as a whole, as a sort of statement of position at the time?

A It would enumerate the full situation with the conclusion and advise the Senior Management Team in terms of how the conclusion was----

Q Thank you. So, let's go to page 196 and let's go to page 197. So, there's a series of actions observed and what I want to understand is what was it after this was produced that finally drew everything together and enabled people to reach the conclusion amongst the members of the IMT that the ward was microbiologically safe after this?

A After this, while they were the IMT members, there were also the different levels of discussions with Health Protection Scotland and colleagues from chief nursing officer.

Q And do we ultimately end up going to a video conference on, I think, 20 November where the matter is brought together in a meeting?

A Yes.

Q Yes, right, okay. Now, what I want to do is look at an email you sent on 14 September 2019, bundle 27, volume 8, page 149. So this appears to be an email from you to the chief executive and the medical director, and you discuss-- What I really want to understand is this, you effectively briefing the two of them of where you'd got to at this point. You're going to have to nod because the person doing the transcript can't see you nodding, so you have to say, "Yes", if you agree.

A Yes.

Q Yes, right. Now, and it sets out a series of meetings that are to follow. So there's a meeting on 16 September with all haematology consultants.

A Yes.

Q And then the next IMT is going to be the 18th.

A Yeah.

Q Now, there's been a-- If

we can take that off the screen, there's some evidence from Professor Gibson at paragraph-- from her statement, paragraph 228, that, in terms of the IMTs throughout 2019:

> "No solutions were forthcoming and the problems with infections persisted. An enormous damage was done to the reputation of our unit. As consultants, we didn't feel appreciated."

What did you do to ensure that they did feel appreciated and that their positions were understood?

A I sought their participation and organised the specific meeting with the consultants themselves as----

Q And that would have been the meeting there that was in that email?

A 16th, yes. I also-- Looking at the timing of the meetings, I ensured that the meetings were set at times that allowed their participation.

Q Thank you. Now, if we go back to your statement, you, from page 232, paragraph 13, set out further detail of your position on what was done on the source about the investigation. Now, I have a number of-- we have a number of technical questions, some of which we will have to address to Professor Leanord, but I wanted to start with some epidemiology and how you used it, and some issues that have arisen in evidence, and then look at whole-genome sequencing and what you understood it to be useful for, and then we'll move on to a few remaining things and the Case Notes Review. So, if we can think about the epidemiology, am I right in thinking that Dr Kennedy's 2019 report was quite important in the process that-- the conclusions you reached?

A Dr Kennedy actually presented the data at the IMT meetings itself.

Q Yes. Well, can we look at his report, which is bundle 6, document 28, page 104? So I think this is his report and he gave evidence two days ago, day before yesterday, and his report has been described by him as an update of a previous report. Is that something you're aware of?

A Within the IMTs, Dr Kennedy has brought data that he presented in as a slide and he talked to it. He didn't bring the report that you present here. He actually brought the data that was showed.

Q But he explained in evidence on Tuesday that the data he

was presenting on the slides is the same data, albeit extended by a few more weeks from this report. Is that something you understood as well?

A Looking with hindsight, at that time, at the time of the IMT, it was actually the data he brought into the meeting itself.

Q Sorry, what I'm trying to say is that we don't have those slides. So we only have his report and when he gave evidence on Tuesday, I asked him what data he was using because this report stops at a point in 2019. If we look, for example, at page 107, which is a graph he and I discussed on Tuesday. You see the right-hand edge is April '19. Do you see that?

A So, part of the IMT, we had to have up-to-date data that was relevant to the investigation in hand. So it wasn't reports from-- that were going to IMT. It was actually plots of the data that were relevant up to the point in time where----

Q No, I appreciate that, but the point that he, I think, I hope it was right, explained on Tuesday was that the data he was producing to you in the autumn was effectively a continuation of this series.

A You have to take it as it is.

Q Yes. All I wanted to draw

out from that is a couple of things about it. So, do you see how below that document there is a table one listing various particular organisms both at genus and species level? Do you see that?

A Yes.

Q Yes. Now, he gave evidence that this is based on a list of organisms that were passed to him by Dr Inkster and that's on page 121 and this is the list of organisms, but the thing that I'm intrigued by, and I wonder whether you think it matters, is that this list of organisms was passed to him in the early months of 2018. This is the organisms that match the definition, case definition, for the previous year's IMT. Was that something you were aware of?

A So, in terms of the lists up to 2019, I'm afraid all I can hear is what you're currently saying, what Dr Kennedy is saying. Coming back to where I was as a chair, I would have expected that all the microorganisms that have been identified to be considered as part of the epidemiological investigation.

Q His evidence, if I understood it correctly, was that the data he was presenting from you was this list from the previous year. Now, he accepts that-- he put to me that

they aren't that different, but I just wanted to check whether you knew that.

A In terms of----

Q Well, his evidence, if I understand it correctly, is that this list derives from a list given to him in the early months of 2018 by Dr Inkster and that he continued to use this list to write his 2018 report and, subsequently, his 2019 report, and to provide the numbers to you in the slides that were considered at various meetings. I want to check whether you're aware that he was in fact presenting you a dataset that related to the case definition of the previous year. Is that something you're aware of?

A I can't recall having had that information.

Q The second thing that-- we can take this off the screen for the moment, is that he-- we discussed what happened the previous year, in the autumn of the year, about he produced a previous report, which is the appendix to the report we just looked at. Were you aware of the previous report?

A I saw them in my bundle.

Q Yes. You would have seen it at the time, would you?

A At the time, we had the

investigation of the incident as it was related to 6A, that was them-- was showing the data he was presenting, that was actually the presentation of previous infections and the geni linked to that cohort of patients from Schiehallion into 2A, 2B and 6A, 4B.

Q And in addition to Dr. Kennedy's data, were you presented with any other epidemiological data?

A On Friday, 13 September, I received the Public Health Scotland report.

Q Well, let's get that on the screen so we can make sure we're talking about the same thing, which is bundle 7, document 7, page 250.

A That's not the one.

Q That's not the one?

A No.

Q Is it bundle 7, document 5, page 294? Oh, that one, right. Okay, we'll find that. Remind me of the title of that because I'm familiar with it, but I just-- at this precise moment----

A The title is, "To support NHSGGC IMT Mycobacterium chelonae cases and the Incidence of gram-negative bacteraemia in the paediatric haem-onclogy."

Q And that's in the form of a, it looks like an SBAR, but it isn't one?

A Yes.

Q Yes. Right, Okay. Well, I will----

A I think it's "SBAR GGC"; "SBAR final draft."

Q In that case, I can probably find it. Could it be bundle 3, document 16, page 127? Does this look like----

A Yes.

Q This is it? Right. I want to just check whether you saw any of the other reports that I put in your bundle. So we'll come back to that, but I'll just put up a few documents on the screen and we'll see whether you ever saw them. Did you see bundle 7, document 5, page 194, or its draft?

A Not until it was in my bundle.

Q Not until it was in your bundle, okay. Did you see appendix 4 to the earlier report, which is bundle 7, document 7, page 194? About this one here, yes. Did you see this report?

A Only in the bundle.

Q Only in the bundle. Well, let's go back to bundle 3, document 15, that one there. Now, allow me a moment just to remind myself of where I am, because I hadn't expected to put this to you. (After a pause) Right, well, let's work through it, shall we? In fact,

this might be a good place for a coffee break. That means I'm more efficient in a few minutes time. So if we take a moment-- if my Lord will let me take a moment, a break at this point.

THE CHAIR: We'll take our coffee break now, Dr Crighton. So if I can ask you to be back for quarter to twelve, you'll be taken to the witness room.

THE WITNESS: Thank you.

(<u>Short break</u>)

THE CHAIR: Mr Mackintosh?

MR MACKINTOSH: Thank you, my Lord. So, if we can get on the screen, bundle 3, page 127, as we had before. I think I can pick up the same questions from here as I would have picked up with the HPS report. So, just to get the context, from your understanding, this is produced in September in order to inform the IMT? Is that what you understand the purpose of this is?

A Yes, I received it on, I think, the evening of 13 September.

Q 13 September. So this might have been after the meeting at which the view of Professor Jones and Professor Leanord had first been stated in public, in a sense?

A That evening, yes.

Q Yes. Okay, and we have the situation described:

> "...to support you with your investigations into an increased incidence of gram-negative bacteria and data exceedance of Mycobacterium chelonae in ward 6A..."

Describes the patient group, and there's a bit of narrative in background, and then there is an assessment of the increased incidence of gram-negative bacteria, and they report that they extracted some data from the ECOSS system:

> "...of all blood samples of children less than 16 years of age from 2013 to what would have been 8 August 2019."

Is that-- You understand the date range to be that?

A Yes.

Q Yes, and then you categorise them to pull in all these different places. Now, what I wanted just to be clear here, to be understanding your understanding of this definition of the 2A/2B group. Is this patients who were being treated as inpatients, or inpatients and day cases?

A My understanding is that it was the full cohort of patients irrespective of where they were treated.

Q Of----

A Irrespective of where the treatment happened.

Q But it would have included day cases as well as those admitted overnight?

A Yes.

Q Yes. Would it have included patients, for example, who were cared for in the clinical decision unit at the point of the earlier decant of Ward 6A in 2019?

A I don't know that answer.

Q From your-- In very broad terms, would it include patients who were being treated for haemato-oncology issues who were being accommodated in other wards in the hospital?

A So, if we look at the bullet point 2A/2B, it's-- So, my reading is exactly as it says there. So it's the:

> "Previously treated in Ward 7A, Yorkhill, Royal Hospital Ward 2A/ 2B, Ward 6A, 4B, patients cared for haemato-oncology specialties, including A&E admissions with previous admission to Royal Children's haemato-oncology specialities up

to May 2018."

So its clear description of patient cohort is there.

Q One of the reasons I asked this, Dr Crighton, is that when Mr Mookerjee, the epidemiologist instructed by the Inquiry, was attempting to do a similar piece of work in his eyes, he detected a difficulty in identifying patients because there were, at times, proportionately, a relatively large number of haemato-oncology inpatients who were being accommodated in other wards within the hospital, other than 2A, 6A, 4B. Do you read this definition as including those patients or excluding them?

A I read them as including them, as there are ways of identifying patients----

Q Would this have been by, for example, the identification of the consultant?

A The consultant or the diagnosis. So, when we extract data, there are several, kind of, indexes. So when you look at the big table, it's actually, what are the stamps, and it has several stamps in terms of date, specialty, consultant location.

Q Would HPS have had access to that level of granularity from their end of the ECOSS system or is that limited only to Greater Glasgow access for its own data?

A Scotland has an amazing data repository whereby we simply hold, through the then information statistics division, the whole data centrally. So, even Glasgow, sometimes we go and pull the data from the centre.

Q I appreciate that but there is some suggestion from some of our witnesses that if you're looking at it from within Glasgow, of a Glasgow patient, you can actually see more information and Dr Kennedy described yesterday how from his perspective he could drill down to the location, the consultant, he could look at the nature of the tests being carried out, and he could read the medical notes. By what he describes as a four-stage process, he could have a quite good level of understanding of whether the patient involved was a Schiehallion cohort patient.

I got the impression from evidence and others involved outside Greater Glasgow that when you look at it nationally, you don't have that full level of detail. You can't, for example, read the medical notes. You are limited to the location. Is that something you understand or have I got that wrong?

A So, it depends what

you're looking at. The ECOSS is the microbiological data. We also have the statistical returns through the Scottish morbidity records that-- and you have the CHI, which is the unique patient identifier, that allows you to link hospital episodes with individuals and results. So there are ways of bringing data together.

If you're in NHSGGC, it depends what you look at. If you're looking simply, purely at the laboratory system, the LIMS, you will have a limited amount of information and that's why we have the ability to link different datasets that provides a very rich----

Q I understand that but-- I mean, if you don't know the answer, it's understandable but it seems to be important in the analysis of Mr Mookerjee's paper as to whether he is or is not capturing Schiehallion cohort patients who are located geographically outside Ward 6A, for example, in 2019, and I wonder whether this patient population would, for example, have captured a patient – we know there are some, they've given evidence – who during 2019 were accommodated at adult wards outside 6A. Can you help me with that?

A I think, first of all, it would help if you asked the author of the reports in great detail. My understanding is that Health Protection Scotland had access to different datasets they could have linked and I cannot answer----

Q But you don't know?

A I don't know what Mr Mookerjee's access has been.

Q Well, he didn't have access to ECOSS, but----

A Yes.

Q So, you don't-- you wouldn't know-- Well, would you have known at the time whether the dataset was geographically constrained to just 2A and then 6A and then 4B, or do you think, from this, that it is wider and covers patients located elsewhere in the hospital?

A So, the paragraph for the purposes, right, patients held Yorkhill, there is the Yorkill Hospital 7A, and the bit where it says:

> "...patients cared for haemato-oncology specialties, including A&E admissions with previous admissions..."

So my reading and inference is that it would capture not just the geography, the location----

Q Thank you.

A -- it would be the full

cohort.

Q Now, the next thing I want to do is just make an observation and see if you accept it, which is that at the bottom of the page, they look at two different-- sorry, bottom of page 127, the author of this report is looking at two different classes of microorganisms. There's a gram-negative in toto and an environmental bacteria list.

A They would be a subset.

Q Yes, a subset of that, and to what extent is that different from the approach taken that you recollect of Dr Kennedy in his various slides and presentations to the Board? Did he have a different approach? Did he look at a different list?

A If I recall, Dr Kennedy presented the, kind of, environmental and-- if I recall, the environmental ones plotted exactly what the infections were.

Q Right. Then if we go over the page, there's then a discussion section about the methodology and I'm not going to ask you about that, other than to ask you a question about the utility of SPC charts. Are you aware of any views that SPC charts, whilst very useful in some circumstances are less useful in other circumstances?

A So, there is-- there are several layers in terms of how data can be shown. Number one is the SPC charts that look at the mean and depends where the, kind of, baseline has been established in terms of what is the, kind of, background expectation within that that group. It does not necessarily, fully-- it just shows where the problems are and where to investigate, and then there's another element of analysis, which is comparisons to other units.

Q If we can go onto the next page. So, before-- I'm going to come back to figure 1 in a moment. I'm just going to leave that out of the way and look at figure 2 to continue the conversation on SPC graphs. Now, we had evidence from both HPS witnesses and also, indeed, from Dr Kennedy that an issue with SPC graphs is that they do rather require there to be a baseline that you can compare against. Is that something you would agree with?

A So, it would be the, kind of, behaviours that-- or the background rates that would need to be established.

Q So, in this particular chart, if it's the case that like the other two HPS reports, the mean is calculated by reference to the points of

data on the chart, what I want to understand is, what's the background rate you're comparing with?

A So, if we go to the page before----

Q Yes, of course.

A -- above table one and just the centres:

> "The central line of the SPC was calculated as the median of the monthly cases."

The median is not the mean. The median is the most, kind of, frequent----

Q Frequent, yes.

A Yes.

Q So, the window for the background is August 14 to July 19. Is that right?

A Yes. It's----

Q So, whatever these charts do, they don't compare the-- they don't use the SPC graph to compare the rates in Ward 6A with the rates in Yorkhill, do they?

A They-- It's not a comparison. It just simply illustrates for this group of patients-- it shows the variability in terms of the infection rates around that median.

Q Yes, but what I think I'm pressing you on is that if you want to use an SPC graph effectively, do you not need to have a baseline to compare with of events beforehand?

A So, the median, in my understanding, would serve as that kind of midpoint.

Q If, for example, you had an outbreak of an infection in the community, a public health matter, where frankly it shouldn't really occur at all except in very low numbers, presumably you would have a long baseline of the past where it's not occurring at all and you would use an SPC chart to see that suddenly it's increased in comparison to that baseline. Is that roughly how one would approach matters?

A I would take you one step back.

Q Of course, do.

A So, there's a baseline in terms of infections occurring in the population and you would-- there is a, kind of-- So, you can plot what happens in the long term, an outbreak when there is an excess about that. So, in a way, probably we're saying the same thing.

Q Yes, so if we look on to the next page----

A However, there's another test in terms of whether it's an outbreak or not and that is an excess of related infections.

Q Oh, of course.

A So, it's not, you know, bringing three different things together. It's the same, and we're looking at a common source for that.

Q Well, we'll come back to that in a moment, but if we go onto the next page and, again, I will come back to figure 1 in a moment. If we look at figure 2 and zoom in on the bottom half of the page, so let's just see what we have here. Am I right in thinking that the blue line positioned just above 2 on the count on the y-axis is therefore the median between August 2014 and April 2019? It's not the baseline of what you would expect, as it were, in normal circumstances.

A It's been-- Actually, just before table 1, that's been stated as being the median between----

Q Yes, so I understand. So, this isn't a-- this median is not at any measure a statement of what you would normally expect, is it?

A It is an illustration of what the situation in that particular cohort is.

Q Yes, and so if it's been the case that the water system for the hospital when it was first opened-- Well, what's your understanding of what was the state of the water system in the hospital when it first opened?

A It's from what I read in the documentation.

Q Which documentation?

A In the documentation that was in my bundle that highlighted a lot more that my understanding was. So there has been an element of additional bacteria that had to be controlled through the chlorine dioxide and point-of-use filters.

Q But did you know that in the autumn of 2019?

A Not to the full extent.

Q No. So-- But would you accept that, to some extent, since the hospital opened, there has in retrospect been an issue that required to be addressed by the chlorine dioxide in the water system?

A It was stated within the first IMT that measures had to be put in place to address the water quality.

Q Right. So, what I'm trying to get across is, therefore, that the number of these infections, the gram-negative and environmental infections, that took place in this hospital since it opened is not a fair comparator of the background rate, is it?

A In terms of----

Q Well, one of the things you've been very keen to explain to us is that you consider it important to

identify whether the number of infections are above the background rate, but what I'm just trying to get clear is, in this report, there is no information about what the background rate is, is there?

A No. It's the-- it shows what the average is across the period.

Q But it's not the background rate?

A I wouldn't call it the background rate.

Q No, right. So, would the background rate be the rate in a comparator hospital?

A It would-- The rates in the comparators would show where we are in terms of our situation compared to others. I mean, that's what is----

Q Right, and it might be better to compare with more than one hospital to get a proper comparison.

A And that has happened in terms of comparing to the other units.

Q Well, we'll come to that in a moment. So, what I just want to do on this page is to go over to the next page and I want to look at the next-- the narrative section that appears after the figure 3. So, figure 3 is the SPC chart for environmental blood culture positive count, and it's the same baseline comparator but, then, we have some discussion which is:

> "When comparing the overall rate over 5 years at RCHYH to the combined rate of the other two Scottish children's hospitals, Royal Aberdeen Children's Hospital NHS Grampian and Royal Hospital of Sick Children, NHS Lothian, the incidence of positive blood cultures in RCHYH was higher compared with the other hospitals for environmental bacteria, however, there was no difference in the rates of gram-negative blood cultures. When comparing post-move, there is no difference in the rates of gram-negative blood cultures or environmental blood cultures."

I wanted just to understand your understanding of the nature of these two other hospitals compared to the Royal Hospital for Children at the Queen Elizabeth. Do they have a haemato-oncology unit?

A I understood that there were children that were treated there.

Q Was bone marrow transplant taking place in those hospitals?

A I'm not aware of that, no.

Q Because there's been

some suggestion, indeed, from Dr Imrie, who's a partial author of these reports, I understand, that-- I asked her whether it's comparable and I said, "To what extent are you comfortable with these two-- that these two hospitals are comparable with this hospital?" And I mentioned that this hospital in Glasgow had a-- was a tertiary centre of haemato-oncology, and her response, and I only have my note, is that:

> "You have to recognise that we only had a short period to do this and the Royal Aberdeen is not comparable, that there were patients in Lothian that were more comparable, but given the time frame it had to do."

Now, is that something you would understand as a reasonable observation about this section of the report?

A So, thinking back in terms of the tertiary centre versus hospitals that actually have lower levels of acuity patients, it means the Glasgow patients would be more unwell, more prone to adverse events. Therefore, while not directly comparable, I would expect the outcomes for the Glasgow cohort might be worse simply because of the nature of the patients. So it's kind of a patient mix that would need to be factored into analysis.

Q Right, but you----

A So, therefore, we might be faring worse because of the nature of the severity of illness of the patients treated in a tertiary----

Q Okay, right. I want to move on to the Mycobacterium atypical positive cases section. Now, we discussed Mycobacterium chelonae in an earlier section of evidence, and I just wonder whether this paragraph rather provides some support that, for some of these organisms, there is simply no baseline rate that you can really look at. Would you agree with that?

A Sorry, what was the question?

Q That for some of these organisms, particularly the Mycobacterium, there is no real baseline rate to compare with because the number of infections is so low that there's nothing-- that, really, you'd expect there to be none.

A The fact that they have not been identified, it might be a difference in how the diagnostics have evolved or our testing have evolved. So, are they completely new? What is the reason behind that? Is it an

artefact or----

Q So, do you think that the Mycobacterium cases in the hospital are an artefact?

A No, I'm not-- What I said, they are there, but in terms of-- I don't know if-- the reason why they have not been identified before.

Q Because if the baseline approach of understanding whether there is an above background rate is important to your methodology, might it not cause some difficulty if some of these microorganisms are so unusual, they don't really have a background rate?

A It's small numbers, so the fact is we need to generate the new evidence in terms of where and the reason why we observe what we do.

Q Why do we need to generate new evidence? That-- You had evidence about Mycobacterium, atypical Mycobacterium at the summer of 2019. There was evidence in the IMT about how these patients had acquired their infections. Would you accept that?

A Sorry?

Q There was evidence in the summer of 2019 that these patients might have acquired their infections away from the point-of-use filters, and you looked at the patient pathways. You recollect that?

A Yes.

Q But that, of course, still meant that there was Mycobacterium chelonae in the water.

A That's possible, yes.

Q Yes. So, what's concerning me is that if you don't know the baseline, then, surely the correct approach is to say, "Right, we've got a problem. Let's work out how to stop the problem at source." Wouldn't that be the correct approach to take?

A And the-- My understanding was that being the source in the water, the control measures through the chlorine dioxide and the point-of-use filters would have been the control measures to prevent patients coming into contact with that.

Q Okay. Well, can I just take you to a document in bundle 1? It will just take me a moment to find it. Yes, I wonder if we can go to the IMT of 19 June, which is page 320. Now, you weren't there, of course, but if we go onto the second page at 321, in amongst the redactions, we have a description of the two cases that were identified at the time. I'm assuming you're familiar with this.

A No, I'm not familiar with this.

Q Okay. So, what was reported in the minute, and there's quite a lot of parole evidence about this, is there was a patient case early in June, prior to the IMT, and then a further-- and that was:

> "M. chelonae was isolated from the water sampling in June in 6A, and a previous case identified in May 2018, and there was two cases in one year considered to be data exceedance, and the incubation period is quite long, 15 days to 6 to 8 weeks, and there was to be a review of the movement of the patient to see whether they were ever in contact with a unfiltered water source."

And then, if we go onto the next page, do we see, "Recent"-- top of the page:

> "Recent sampling from 6A [can we zoom in] has found a marked reduction in gram-negative bacteria, but atypical Mycobacterium is isolated from a number of points. These were random outlets chosen for sampling. These samples were taken with point-of-use filters off. Dr Inkster explained that chlorine dioxide has been very effective against gram-negatives. For atypical Mycobacteria persisting, they are more likely resistant to disinfection."

So, presumably, you would have known that, taking over as chair of the IMT in August.

A So, there was-- that's why the additional physical barrier, I understood, was put in place.

Q Well, the physical barrier was put in place in February/March 2018, and they found the Mycobacterium inside the filters, so in the water system, in June of 2019, and it wasn't getting to the patients in the ward if the filters were working and they were being tested, but the hypothesis was that the particular patient involved might have caught this infection elsewhere in the hospital. And you've explained to me, about an hour and a half ago, that the patient pathway was tracked down and more filters were fitted, and that's consistent with the evidence of a number of people. Now, what I'm trying to get across, though, is you've just told us that you thought that the microorganism will be controlled by the chlorine dioxide. There was evidence they weren't being, wasn't there?

A Sorry. It was the double control, so it wasn't just one.

Q Yes.

A It was both chemical and physical barriers.

Q So, any observation that the ward was microbiologically safe should probably have been stated, "The ward is microbiologically safe as long as we keep the filters on." Would that be a fairer way of putting it?

A Given the controls that are in place.

Q So, are you agreeing with what I'm saying, or are you rephrasing it?

A So, what I'm saying is that it's microbiologically safe, given the fact that controls are in place.

Q Okay. Now, what I want to do now is go back to the table in bundle 3 that I promised we would go back to, and so that's at the top of page 200-- Now, if we could zoom in a bit. So, what do you understand that this is trying to tell us about?

A It shows the persons with the type of infection per time or week of the-- when they were identified, and there are lines that show when we moved-- when the move to 6A for B happened, and then the colours clearly identify what agents or what infections-- what bacteria were causing the infections.

Q Is there anything-- What's the message we should draw from this presentation?

A It shows that there were different bacteria that were continuing to appear as causes of infections with a smaller-- with a far lower frequency after the move to 6.

Q So, you think-- So, which is the point you want to draw out, that there's a far lower number but there's also different types of bacteria? Is that what we should take from there?

A There are, yes, there are different ones.

Q Now, if we could take that off the screen, before we move onto whole-genome sequencing, I'd like to ask you about this, is that, if we go to your statement on page 235, at paragraph 28, you're discussing the root cause analysis and you mentioned the idea of a common reservoir. To what extent was your approach as chair of IMT based on the idea that you were looking for one common reservoir?

A I was looking for common reservoirs whether it was one or a few or whether there was an intersection in practices.

Q And I'm just wondering here whether part of the difficulty of this IMT might have been-- and indeed

the previous ones, might have been that there were multiple possible sources going on at once.

A I think the evolution of the IMT and the detailed root cause analysis could not identify a single point of infection, therefore, it might have been different sources of infection.

Q Yes, but, if it's different ones, then the failure of the root cause analysis to identify a single cause would not mean there was no environmental risk, would it? So, what I mean is that if you have root cause analysis and it cannot find a single reservoir, if there is a single reservoir-- if the theory is there's a single reservoir, not finding one would be important. Have I got that right?

A It's important because it means that there isn't a massive point of failure. There might be several-- There might be different ways of acquiring the infection, therefore, looking at the full infection chain. So it's not just the reservoir that's an issue. We need to ensure that every element in the infection chain is addressed.

Q But the hypothesis----

THE CHAIR: Could I just clarify----

MR MACKINTOSH: Yes, go on.

THE CHAIR: -- I mean, for-- so that I'm following the evidence. When we use the expression "reservoir" in this context, as in paragraph 28, do you have in mind, for example, the whole of the water supply to the hospital or do you have in mind particular locations-- for example, particular locations within that water supply?

A So, to give you an example from literature, when there are outbreaks of infections with environmental agents, there is sometimes a sink or an element that has been identified as a place where an infection agent has started proliferating to the extent that actually it infected several individuals and we can actually identify that they are linked and we identify actually where that has happened. So it's that kind of element of specificity that is required to then address the-- if you take-- or clean it up or remove the issue----

THE CHAIR: Right. So, when we're using the word "reservoir" in this context, it is something, for example, of the specificity of a particular sink.

A It is the specificity of where that would be. So then you start looking at actually, where does it come from? So "reservoir" is actually where is the microorganism coming

from? That's what the reservoir is. It might be that-- It might be my own body when I get infected, that the reservoir has been my own gut, for instance.

Q Right. Thank you.

MR MACKINTOSH: What I suppose I'm concerned about is that, given the hypothesis included the water in the ward, the water elsewhere, the chilled beams-- the dust on the chilled beams and the water of the chilled beams and the patient's own gut, so there's at least five different possible sources there. Would that be a fair list of hypotheses?

A They are specified in the minutes of the IMT and the hypothesis is there to actually go investigate and look for conformation or refute.

Q I appreciate that but if you have a situation where there are at least five possible sources-- So the five possible sources I'm thinking of, which have all been mentioned in the IMT, are: patient's own gut; the water system inside the filters; the water system elsewhere in the hospital; the chilled beams-- dust from the chilled beams in condensation; and the water supply that supplies the chilled beams.

If you've got five different possible sources, and there, of course, may be more, then it wouldn't exclude those that you couldn't find a single common reservoir, would it?

A I think investigating all of them-- So, part of any investigation is, actually, for instance, when you see a situation, you're thinking, where could it come from? And then it's actually taking every single one and investigating, is that the real one? So hypothesis is there to go look and find if you were correct or not, and you can have ten different things. We run-- Sometimes we run investigations where-- with detailed questionnaires when-- and the root cause analysis is looking, where would it be?

Q Yes, but the thing that I'm worried about is that, in paragraph 28, the final sentence is, "The root cause analysis could not identify a common reservoir." That would be meaningless if there was more than one reservoir, wouldn't it?

A It wouldn't be meaningless. It means that there isn't a particular source that you need to go and attack with vigour. It means you need to have the full infection control process in place to ensure that you would interrupt the infection chain and be extremely rigorous in having a whole system approach.

Q But you are listing, at this point in your statement, a series of

different factors which you think are the objective evidence, and perhaps we should go back one page and look at them together.

So we start on page 26, the epidemiological data, which is listed there, and we've discussed that so we'll move on to the next page. We have whole-genome sequencing, which we're going to come to, and then we have 28, the root cause analysis. So I'm just asking about the root cause analysis and saying, you seem to think, from the way your statement is written, that the failure to identify a common reservoir was in some way determinative, and what I'm suggesting is that it wouldn't be if there were multiple reservoirs.

A Can you put it in a different way because I'm not entirely sure.

Q So, yes, would you agree with me that your statement, at paragraph 28, seems to suggest the failure to identify a common reservoir was important and a significant finding?

A It was an important and significant finding in a way that there wasn't a major point of failure.

Q But if there were, as a hypothesis, multiple different reservoirs available at the time, the failure to identify a common reservoir would not be important and significant, would it, because infections can come from multiple different places. Would you agree with that?

A And that's why the infection control chain is important, that you take that full system approach in protecting the patient.

Q I understand that but, at this point, you were listing a series of factors and I'm going through them all. So I think we've probably dealt with that one. We then have your next paragraph where you say, "The combined findings of the Health Protection Scotland report," which we've dealt with, "the root case(sic) analysis," which we've----

A It's the following one probably, which is the document that was produced later.

Q The one we talked about?

A No, it's the subsequent one.

Q The subsequent one? And what's the subsequent one?

A This one.

Q So, if we go back to bundle 7, document 7, it's this one?

A Yes.

Q Right. Well, let's go through this then. So, if we go onto

page 253, do we see the objectives of the review?

A Yes.

Q In what way are the objectives of the review to assess whether there is a changed number infections over the background?

A It's probably the second one and the third one.

Q Okay. Well, let's go and look at the answers that were produced. So, if we go to 256, we have the case definition in the first sentence of case definition which seems to be the same, "The trends in bacteraemia in the patient population were assessed using the HPS ECOSS data extract." We then have, on 257, a discussion of the denominator, and I've been through this with Dr Imrie, so I won't go through it with you, and then there is incident rate.

Do you see how the third line of this paragraph goes:

> "Incident rates for the whole of the Royal Hospital of(sic) Children, including positive blood cultures and bed days of Wards 6A and 4B, following the move to Queen Elizabeth Hospital, were compared with the combined rates for the Royal Hospital for Sick Children in Lothian and the Royal Aberdeen Children's Hospital in Grampian."

You see that there?

A So, it's actually what was included within that and it's the definition within-- on page-- where the dataset is explained, the ECOSS extract.

Q What I read this is that they've compared-- now tell me if it's wrong, they've compared the incident rates for the whole of the children's hospital with the combined rates----

A For the specific cohort of individuals, irrespective of where they were----

Q So, you think this is limited just to the haemato-oncology patients?

A Reading the methodology, that is what I understand.

Q Okay. Then we'll go onto the-- We're going to go and look at the results without the redactions. So we need to look at a different document, which is the draft, which is document 6, page 214, and so this version-- I don't know whether you've seen this version.

A Yes, I do have a copy.

Q Good, excellent. Well, we'll just----

A And it's been absolutely

instrumental in-- and debated and read in the IMTs.

Q Thank you. So, let's go and look at page 223-- No, no need to do that. Let's go and look at page 227. So, what I want to see over at the bottom page there is a discussion of the case-level data. Now, please tell me if I'm missing something out that you think is important but what I thought was important was to go onto the next page, observing the gram-negative case definition had an upward shift with a run of 10 density points above the mean from March to December 2017 with upper warning limits breached in '17/18-- and '18, and you're familiar, I'm sure, with the history of that. Were you aware of what was going on then?

A Yes.

Q Yes, right, okay, and then figure 5, we'll come to the figures in a moment, shows the SPC chart for the environmental group case definition. The upper warning limit was breached in June 2018, and then it says, in the last sentence of-- this is about figure 5, "The environmental-including enteric group was breached in March 2018 and March 2019."

And then figure 7 describes the incidence of gram-positive blood cultures, and it has no upward shift following the move but a breach in '16 and various other breaches but the rate-- the final paragraph there-- sentence of that paragraph, "...the rate now appears to be similar to that observed prior to the Hospital for Children." You see that there?

A Yeah.

Q Right, and then the last paragraph:

> "No change was observed when crude comparisons were made between the rates-- with the exception of the gram-positive rate, which significantly decreased when compared to the overall incident before and after the move to the Hospital for Children."

What do you take from the last sentence?

A In terms of the crude rates of gram-positives?

Q Yes.

A There has been a significant drop in the incidence of----

Q Now, what would that tend to suggest?

A I'm aware that the CLABSI work in quality improvement and the line of the care has reduced the rates of infection we saw.

Q It's the case that if you

improve practice, you may well see changes in your gram-positive numbers?

A And that's what it says.

Q That's what it says? Yes, okay. Now, let's go over to-- just for completeness, to page 229, where we see the SPC charts that they're talking about – figure 4 and figure 5. What I wanted to do, however, was to move to the comparison where-- the Health Board section on page 231. So this, I think, is what you wanted to refer to.

A Yes.

Q Yes. And so, broadly speaking, is this the same result as the previous report we looked at 20 minutes ago?

A This is an-- updated with additional statistics embedded there.

Q Yes. And if we just look at that section, do we see the sentence at the end of the first paragraph, comparing the two hospitals on one side with Glasgow on the other, "There was no difference in the rates of gram-negative group or environmental group"? I presume you thought that was important.

A There are several references and comparators for different periods. So which one do you refer to?

A Well, I'm thinking the first paragraph. So if I read the first paragraph-- Again, tell me if you think I've got this wrong. The first paragraph is looking at June '15 to September '19 and I noticed the----

A It's the positive one.

Q Sorry?

A So it starts with a positive, yes.

Q The one that begins "when comparing"----

A Yes.

Q And I read it as covering June '15, September '19. Would you agree with me?

A Yes.

Q Yes. And the final sentence seems to suggest there was no difference in the rate of gram-negative group or environmental group between the Children's Hospital and the other hospitals.

A There was no difference in the rates of gram-negatives or environmental group.

Q Yes. Now, what I want to understand is, why do you think that was? Why was there no difference in that period?

A It comes back to establishing that background rates, what is expected in terms of the population overall. Is it different-- Is

there differences in practice or is it what that population experiences across?

Q Yes, because the thing that worries me about that sentence is if we go back to the previous page, we see the environmental-- if I go to the previous page before that, sorry, the gram-negative group at the top. Do you see how there's a circle around some data points?

A Yes.

Q That I think is where there's a discussion of an exceedance of some sort in the text. Dr Kennedy has given evidence that, in his data, he could see possibly some peaks in the rates of infections in 2017/2018. Would that be consistent with what you remember? You're nodding.

A Yes.

Q Yes. So, how could it be that the rates in the hospital for children were similar-- How could it be reassuring that the rates for the hospital for children were similar in that period to the hospitals in Edinburgh and Aberdeen? How is that reassuring?

A It might be in that, overall, over the period, there was variability in the rates that, overall, the rate appears to be the same. So it might be that it's just the kind of

appearance in time of different infections was different and it showed there, while overall would be the same.

Q Because the problem with that, is it not, that if you're going to rely on this finding that there is a similarity between the infection rates in this hospital and the combined rate in Aberdeen and Edinburgh over the whole period since 2015, that's going to be an important factor for the Health Board, which it seems to be? Then that has to involve thinking that there hadn't been an excess of background before, doesn't it?

A It means that the practice or the rates observed in Glasgow are similar to the units, and the question is, is that what the background rate for this population is?

Q As a matter of reality, in 2017 and 2018, do you consider that the rate of bloodstream infections in the haemato-oncology patients in the Schiehallion Unit, 2A, was comparable to the rate in other hospitals and at background levels?

A I do not know.

Q But you must know because you took over an IMT which had to understand the context, surely?

A So, the data from the other units was only available once the Public Health Scotland reports were

made.

Q Well, no, it wasn't; it was available in a report provided by the Health Board in January of 2019, wasn't it, in appendix 4?

A I'm sorry, but I haven't----

Q You hadn't been given that report? No. So you weren't given the earlier HPS report that we put in your bundle?

A No.

Q No. Were you given the report by Dr Peters and Ms Harvey-Wood from the previous year?

A No, I haven't seen it seen it, no.

Q Were you briefed on what happened in the Schiehallion Unit in terms of infections '17 and '18?

A No.

Q No. So, I absolutely understand how it would be superficially reassuring to see that the rates in this hospital and the Aberdeen and Lothian hospitals were comparable for the whole period since the hospital opened, I see that, but does not the experience of the ward and the patients suggest that that's not really accurate?

A I would say that the control measures that had been instituted in place to ensure there's no risk to the patients in response not to the epidemiology but to the cases and the investigations that happened during the period, would show that we have taken the infections seriously.

Q Well, that wasn't the question I asked you. So, let's go back to-- two pages on in this report. This paragraph that begins, "When comparing," seems to have been given considerable weight by the Health Board. It is mentioned in many documents. It is stated repeatedly that it is reassuring that the rate of these infections in this hospital is comparable to the rates in Lothian and Aberdeen when taken together, but the date range for this is that statement has to be true for the whole period that the hospital opened, doesn't it?

A My recollection was that the overall rates and the report was highly relevant to the incident that I was managing in terms of 6A and 4B and is the very last paragraph at the bottom of the page, so following the move, and that was----

Q Yes, but that's about-- that's internally within the hospital. Is that comparison with other health boards?

A That is all comparison.

Q All right, well, let's look at the second paragraph. When comparing over the two years, so

that's from before the water incident, are you familiar with when the water incident starts?

A Yes, it's in the graph there.

Q It's in March 2018:

"So, before the water incident to September 19, the rate of positive blood cultures was higher in the children's hospital for environmental, including the enteric group and the gram-negative group, but lower for the gram-positive group, and there was no difference in the rate of the environmental group"

Do you think those findings are important?

A For the decision-making, the following one, the next paragraph is more important to bring in the IMT and the incident.

Q So, this is following the move, there was no difference in the rate of the gram-negative group. However, the rate was lower for the gram-positive group. So you feel that's the important one for you?

A Yes, it's the very last one.

Q But the thing that I'm trying to understand is-- and I want you to tell me if I've misunderstood this, but when you're doing epidemiology with numbers, you get an answer, and sometimes you look at the answer and think, "Well, that may be what the numbers tell me, but that doesn't match reality." That's something that happens quite often in epidemiology. Am I right about that?

A And that's why you look at the next----

Q The next stage, exactly. So, this last piece of information is consistent with the idea that the ward is now comparable to the other hospitals. Have I got that right?

A Yes.

Q Yes. That logic requires this piece of data, this comparison data as a whole to be a valid piece of epidemiology, doesn't it?

A Yes.

Q Yes. But the first paragraph isn't consistent with the experience in the hospital, is it?

A And it breaks it down for different periods to take account, in my understanding, of the incident that clearly shows that between-- So, the second paragraph shows the increase. So the averages is one thing, the overall rates, and then you look at different periods and that brings additional clarification in terms of how

the average has been reached to where it is.

Q But if the bottom paragraph is methodologically justified, then all the rest of it has to be-- the methodology justified as well, because it's the same methodology applied to all three.

A And it's looking at actually where there are peaks, where there are troughs that brings that kind of average over a very long period of time, because I was trying to say earlier, it might be-- and there are, if we're looking at many other diseases, there are seasonal variations or there are variations in the incidence. So you might have like flu, it's high in December, January, but then it's very low. So, overall, if I'm looking at the incidence----

Q So, if the first two paragraphs----

A So it's looking at specifics.

Q Yes. If you say the first paragraph is an average over the whole period, and therefore is exposed to the risk of, as it were, there being some variation that is lost in that, the second paragraph is a subset, isn't it? Isn't it?

A It's the calculation for that specific period.

Q Yes, so if the second-- third paragraph is right but the second paragraph is wrong, are you just not picking the options that are most convenient to you?

A I'm sorry, but I was the chair following the move to 6A, 6B, so the period relevant was following the move to Queen Elizabeth.

Q I'll press it again. If the methodology produces a wrong answer for the whole average and a wrong answer for the subset in the second paragraph, i.e. the Health Board don't accept that the second one is true, then how can you insist that the third one is true?

A Wrong and right answers?

Q What I mean is that if you look at the second paragraph, that is saying that there was excessive infections in certain classes between October '17 and September '19. Now, if I understand the Health Board's position correctly, and I'm sure someone will correct me if I've got this wrong, the Health Board doesn't accept there were excess infections in that period and it, therefore, would disagree with that statement.

A I cannot answer that question. What I can say is actually the analysis shows that there has been

an increase between October 2017 and September 2019 for environmental, including the entire group.

Q So, you wouldn't accept that effectively you're just picking the part of this that suits your case?

A I read it looking for, what does it say? Because, ultimately, the epidemiology is there to say, do we have a specific issue? Then we can actually, then, go and unpack and understand what are the differences behind the observed differences.

Q Okay. Well, I think we'd probably better leave that, and what we'll do is we'll move on to whole-genome sequencing. So I absolutely appreciate that this isn't your field, and that of Professor Leanord's and we'll ask him questions next week, but what I think it would be important is to understand your understanding. So, you've discussed it in your statement, but how would you explain the use of whole-genome sequencing in this IMT to a lay audience?

A Well, there are infections that we identify in different individuals. So if we-- looking at the kind of histogram that shows, for instance, let's say Enterobacter, and it appears in different individuals across the time, what we want to do is to look through

genetic whole-genome sequence, if they are related. Is it the same bacteria that is infecting everybody? So it's a technique that shows, or tries to identify if either there's been patient to patient, or there's been a common source that impacts everybody.

Q So, I suppose I should just ask a couple of questions to see how far you feel comfortable with the subject, which is, if we go to paragraph 25, which is that you state:

> "In support of the hypothesis, I sought epidemiological evidence to support the existence of an outbreak, two or more or an excess above what would be expected. Infections caused by the same bacteria would be genetically the same."

I just wondered why you think that infections caused by the same bacteria would in this situation be genetically the same.

Q So, common practice in looking at outbreaks, they are related. So what I meant is that kind of very close relatedness because if there is a common source, it's the same kind of-- type of infection. So we can identify them being related.

Q So, I absolutely

understand that in the context of the sink that his Lordship asked you about earlier on is that you might have a sink that's got a-- I think, as it were----

A It might be a food. It might be a person.

Q Yes. So, you might have a single small space, a tap, some food, a person, where all the bacteria are coming from. Is that the scenario you're imagining?

A Or-- Yes, and it would allow you to take action to eradicate that----

Q Yes.

A -- source.

Q What would you do if the source was an entire water system of a hospital with millions of litres of water? Would that still-- Would you still be entitled to assume that the infections caused by the same bacteria will be genetically the same?

A You would look to find the bacteria in the water if that was the case.

Q But would you be entitled to assume that they were genetically the same?

A So, I think Professor Leanord's paper explains how closely related they would be.

Q Well, we'll ask him.

A Yes.

Q Okay. There was some evidence last week from Professor Dancer-- in fact, it wasn't last week, it was on Tuesday-- it was last week from Professor Dancer, and Professor Dancer-- Have you come across her work, Professor Dancer of Napier University?

A I know of her but I haven't studied her work.

Q Well, she gave an example when discussing the typing of organisms. From her own practice, and if I get this right, she explained that there had been a problem in a hospital where she was working with haemato-oncology patients----

A I think it's in the report.

Q In which report?

A In the whole-genome sequence report from Professor Leanord. It's included in one of the analyses----

Q Well, it might be, but the observations she made might not be. So, she described the scenario and she said that initially they couldn't make a connection between the samples they were finding in the patients and the samples they were finding in the environments, and her observation to the Inquiry was that when you can't initially make the connection, you keep looking until you

do make it. Would you agree with that as a general principle when you're trying to identify-- work out what's going wrong?

A Particularly if it's the same organism.

Q Yes. So, should you keep looking to find the connection?

A For the same organism, yes.

Q Did you keep looking to find the connection?

A That's why I had asked for whole-genome sequencing to look at actually where----

Q No, but the example she was making was that this was before whole-genome sequencing, and so she explained it to us that with a particular type of bacteria with a flagella, you could look at the proteins on the flagella, and you could, therefore, quite carefully compare two bacteria and discover whether they were closely related because of the proteins on their flagella. Is that something you've heard of?

A Not about flagella, but certainly I'm fully aware of the use of whole-genome sequencing and mapping outbreaks, and actually the whole-genome sequencing has been carried out by Professor Leanord, and the result was brought to the IMT on 5 November.

Q Indeed it was, but the point was-- I wasn't making was what his conclusion was, it was this, is that if you carry out whole-genome sequencing when you have sources-- you have infections that are unexpected in your patient body, and you don't initially make a connection with whole-genome sequencing, what practice requires you to do is to keep testing the environment until you do make the connection, and what I'm suggesting is that by the time you get to November with Professor Leanord's results, you stopped. You didn't keep testing. You didn't keep testing the environment because you didn't keep looking. You were satisfied by what Professor Leanord said, and I wonder what you thought of that.

A My understanding is that there was a prospective plan of sampling there and it wasn't like, "Stop and do nothing." There was an ongoing process in-- as business as usual.

Q But, in the past, the sampling, as part-- the previous historical samples, were they produced as part of a whole-genome sequencing project?

A Whole-genome sequencing was brought in, in 2019,

as far as I'm----

Q Yes, so the previous samples weren't taken with the intention of doing whole-genome sequencing, were they?

A I cannot comment in terms of----

Q Well, we'll ask Professor Leanord, thank you. Now, did Professor Leanord discuss the limitations of his report-- process with you?

A The-- What do you mean, in terms of----

Q Well, in his report, he sets out a number of limitations to his methodology. I wonder if he discussed them with you.

A So, this report was not available at the IMT. At the IMT, the work on Enterobacter sequencing was presented.

Q And then the report follows?

A The report was far later produced. So, at the meeting with the chief nursing officer, we have secured the funding for additional work to be carried out.

Q I see. Well, maybe I'll just ask you a couple of questions and see if it comes up. So, if you turn to bundle 8, document 44, page-- not document 44, sorry. Bundle 6, document 40, page 1230. 1230. Thank you. So, I absolutely appreciate you won't have seen this at the time because you didn't have this report because the funding-- work hadn't been done. I'm putting it up because I want to just ask you what, if anything, did Professor Leanord explain to the IMT in terms of the limitations of the analysis that he was carrying out?

A I cannot remember.

Q Okay. Well, that makes it much quicker. We'll ask him ourselves. Now-- Can you take that off the screen?

A However, Professor Leanord clearly showed the family tree, in a way, showing how close or far the isolates for Enterobacter were, demonstrating that they were fairly far, with the exception of the two samples from the same person.

Q What I wanted to understand is why you think that is a definitive conclusion.

A It's an addition to all the investigations. So, it shows, is there a common source, common reservoir of infection? Because in protecting patients, it's absolutely essential that we address any such threat.

Q Well, would you consider the possibility there might have been multiple reservoirs?

A I think the whole-genome sequencing and the work of the IMT showed that there will be different sources that we could not pinpoint to a single one at that point in time.

Q But what I'm trying to suggest is that if the reality-- of course we don't know what the reality was, if the reality was there were multiple sources of these bacteria or microorganisms in the hospital, then the attempt to demonstrate there was not a single common source wouldn't exclude the possibility there were multiple sources.

A I wouldn't put it that way.

Q How would you put it?

A Looking for a common source is-- it would be a major concern if there was a source that was infecting everyone and you would have to address it.

Q Would it not be a major concern if there were multiple sources?

A Therefore, if you can't find them it simply reinforces the need for proper infection control and taking a whole system approach and looking at every part of the infection control chain. Sometimes we can't identify it and therefore it's the prevention of transmission----

Q I think the point would be made by some people involved in this process in the earlier years that effectively, in November, you stopped looking and you proceeded on the basis that there wasn't an outbreak and managed it on that basis afterwards. How would you respond to that?

A I would say that I would-- I sent it to business as usual from my practice. I'm fully aware that infections do occur and there is a process whereby we need to ensure that we have a whole system approach and are vigilant and identify any infection, so it is business as usual.

Q Okay. What I want to do now, I think, is to ask you a couple of questions that are just sort of-- they're rather-- sort of rather short questions. I wonder if we can take you to bundle 25, document 10, page 364. Now, this is a paper that we understand-- the Inquiry understands, was produced by Ms Devine some years after these events, and I specifically wanted to ask you about a particular observation that she makes on page----

A Sorry. I'm very sorry, but I had no access to the paper.

Q Well, it was included in your document list.

A Yes, but I had errors, no access.

Q Well, we'll take you to it. It's a very short thing. Let's go to page 366. If we go back one page, 365. So, there's a discussion in this paper and it contains lots of observations and I absolutely accept that but there's a discussion in the paper about the impact of social deprivation on hospital acquired infections, and it makes the tragically well-known observation that people who live in more deprived areas are more likely to die early from disease and have more years of ill health. I'm assuming you're familiar with that if you're nodding. Right, and then the last paragraph goes:

> "Comparing rates of illness across boards has always been problematic in Scotland because it has a diverse socio-economic spread and that patients from Glasgow are more socially deprived and have poorer health outcomes due to factors of smoking, alcohol, drug use, etc."

Now, while it's not a very palatable observation, I think you'd agree that it's probably something that's quite widely known as a factor.

A It is a well-known factor, yes.

Q Yes, and then:

> "Compared to the population as a whole, illness itself requires contact with healthcare and we know that anyone who received medical care is at greater risk of infection."

Over the page:

> "It would therefore follow that areas with high levels of ill health may also have higher rates of healthcare associated infections."

And I just wondered whether you felt that in the context of this investigation into Ward 6A in 2019, the idea that the patient cohort came from more deprived communities and, therefore, had higher rates of healthcare associated infections, was a thing you either gave consideration to or you considered worth giving consideration to?

A The analysis carried by the IMT was not really looking into the deprivation associated with the population, and I mentioned in my deposition earlier the fact that Glasgow, kind of, outcomes were on a par with others in spite of the population mix and the acuity. It meant that, overall, it provided an element of reassurance in terms of the quality of care.

Q Okay. So, do you see this as a factor we should take account of?

A It is a factor that I would expect, actually-- I would expect the Glasgow outcomes to be worse than other----

Q Would it make a difference if-- in a tertiary centre, where patients were coming from all over Scotland, would that make this relevant or not relevant?

A Another element of analysis would be more detailed analytical analysis, in terms of taking patient factors and their-- into the analysis.

Q Okay. Thank you. We can take that off the screen.

A But it would make the outcomes actually-- if you take those elements that are likely to bring the outcomes down, so if you take them, it makes the overall things look better.

Q Better. Do you feel that, at the end of 2019, things were looking better?

A I'm not saying that.

Q Looking back at it now, because obviously this is after the pandemic, and it's many years ago, as you've observed, if you were asked at the end of 2019, "Well, how did we do that?" from your point of view, what is

the explanation for the ward becoming microbiologically safe? What were the things that were done that caused that to happen?

A My understanding was that the control measures that were put in place, the full environmental ones, the additional hand hygiene audits, the training, the additional resource put to the wards made it more likely to be----

Q So, what were the environmental changes that you're thinking of there?

A It was the audits, so the careful monitoring of the environment that we were reporting on, the environmental----

Q Is there any physical change to the environment that you think was important?

A I don't know.

Q So, do you think the-- What was it that caused the number of out of specification water testing results to reduce? What was the thing that was causing that to happen?

A In terms of positive results or----

Q The number of positive results were reduced. We've had evidence from Mr Clarkson and from the authorising engineer, and we've got data from the Health Board. They

reduced after 29, and during the latter part of 29. What do you understand to be the reason for that?

A The-- In my understanding, in terms of the water-specific question, if that's what you're asking, is the addition of the dioxide and then the physical barrier too.

Q In terms of the risk, if there was one, on the chilled beams, is there anything that you're aware of that was done in a control measure, in respect to those?

A The IMT clearly described the addition of biocide to the liquid, and change of joints, and controls to prevent condensation. So there were a number of controls.

Q Okay. Well, thank you for that. Now, what I want to do now is just look at a single SBAR, which is bundle 4, document 41, from page 165. Now, I'm just going to make sure I've got my copy on my screen. So, this appears to be an SBAR supplied, I think, by Dr Peters, amongst others. Is that correct?

A I do not know.

Q Well, then let's look at bundle 14, volume 2, document 149, at page 574.

A Sorry, what bundle was that?

Q 14, volume 2, page 574.

A That was another document. So the full bundle 14 I could not access because of error in my----

Q Oh. Well, let's look at your email instead. So, do you see here we have an email from Dr Peters on 27 September, to herself and to you?

A Yes, I can see my name there.

Q Yes. Copied into Dr Green, Arwel Williams and others, including Dr Inkster. Do you see how it says:

> "...a follow-up to the email below: I understand there is a response to the SBAR that is being referred to at the IMTs. I am therefore writing to request that we, as the authors of the SBAR, are able to see the response and respond in kind."

Do you remember there being an SBAR in September 2019?

A I'm afraid I can't remember.

Q Do you remember there being a response?

A I can't remember.

Q Well, let's look at it, just to see if we can-- go back to bundle 4 and hopefully it will become clearer.

So, this isn't-- I understand and let's go through it. There's been an SBAR from Dr Peters and others, discussing the situation which seems to be a narration of the history and a background section:

> "Surveillance of all bacteraemias was put in place when the ward was decanted to 6A. From September to April, bacteraemia rates were very low, and any gram-negatives were coliforms, expected species of bacteria, and usually endogenous gut flora. From April 2019, bacteraemia as secondary to environmental organisms had occurred. Some of these meet case definitions from previous incidents in 2A, Stenotrophomonas maltophilia, Enterobacter cloacae. Others are rare organisms, not part of that incident, but of a soil-water type of bacterial species."

And then she describes them. Now, firstly, is this beginning to ring a bell that you might remember this?

A I'm sorry, but I can't remember.

Q Well, let's keep going. Then, we have assessment and they list some environmental risks. Well, firstly, the air change rate, which is less than three air changes per hour, and then over the page, chilled beam technology, both in terms of build-up of dust, water source, and then there's a pressure cascade listed. Is any of this recognising-- No. HEPA filtration, is that something you recognise? 6A didn't have HEPA filtration, did it?

A There were discussions about HEPA filters added to individual rooms at one point

Q But these had been portable HEPA filters on the ground.

A Sorry?

Q These are portable HEPA filters that get wheeled around.

A In my understanding, yes.

Q Yes. There was no HEPA filtration in the ventilation system in 6A, was there?

A You would need to ask Professor Steele.

Q Would you have known about that when you took over the chair of the IMT?

A No.

Q Were you aware that there were cases of Cryptococcus neoformans in the ward, or at least one case?

A No. There was-- I wasn't aware of being part of this

incident.

Q Okay, let's go to the next page. And then there's the finding of various pathogenic fungi by sampling. There's an issue about toilet plume, exposure to unfiltered water, ceilings, solid ceilings don't exist. They're suspended ceilings. There's no play area, employees in the corridor. There's no double entry door or pressure cascade, and the kitchen sink-- handwash sink is not compliant, and there's an issue with the prep room. Now, I absolutely appreciate this is a temporary ward. Does this-- Do you remember this SBAR?

A Not really.

Q No. Well, let's go to the next----

A There are some issues that-- the likes of discussions about (inaudible) sink, or the portable HEPA filters, or making sure that there are toilet seats within the controls, but that's all I can recollect.

Q Let's go to the next page, which is document 42. This appears, from what we see, to be a response to the SBAR. Do you remember this?

A This has been discussed at the IMT.

Q Yes. I mean, do you know who produced it?

A I think it's been produced

by the Estates, but I'm not entirely sure.

Q So, it's been suggested that some of the observations on the right-hand side are either incomplete or inaccurate. How would you, as the chair of the IMT, check material you're receiving from, for example, the Estates department to be accurate?

A That was presented to all in the meeting. Therefore, I expected the discussions to-- or any issues or differences to be highlighted.

Q Dr Inkster maintains that there was no response to the point-by-point issues that she and Dr Peters raised in that SBAR. Do you accept that?

A I cannot comment on that.

Q Why not?

A Because I do not know if there was a point-by-point from Dr Inkster's perspective. I think----

Q Well, there was. It's the SBAR. We've just been looking at it.

A But looking at the IMT notes, there was an action to send the SBAR back to the authors.

Q And which date was that on?

A I need to check. So, the SBAR was discussed on 6 September.

Q So, that would be bundle

1, page 354.

A And just point 5 under the incident update, "The SBAR from microbiologists was received, detailing the issues."

Q Yes, and at the bottom of-- on page 356, do you see after the twelfth item, it records that:

> "Dr Ritchie asked what action-- where the SBAR was now. It was agreed this would be sent back to the consultant microbiologist for comments and response."

A Yes.

Q And what I want to know is, can you help me about who the author is of the response document, apart from Estates?

A I can't help you anymore.

Q Okay. I wonder if we can go to-- You may not have seen this before because of this issue with your bundles, bundle 14, volume 2, page 599. So this appears to be an email from Dr Inkster to you on 25 October, seeking amendments to the IMT. Now, 8 October IMT-- Dr Inkster is no longer attending these IMTs, is she?

A Sorry?

Q Dr Inkster is no longer attending the IMTs, is she?

A No. Dr Inkster, I think, attended the first meeting and I'm not entirely sure if she attended the second one.

Q Okay. So, we're now-- She set out here in an email a series of what she sees as detailed challenges to the accuracy of the minutes where they report what she's suggesting, and I wondered why these changes weren't made.

A I don't know.

Q Because one of the concerns that, I suppose, she might put it is that meetings are happening in an IMT-- we can take this off the screen, meetings that are happening in an IMT that she had previously chaired, that she sees as taking a different direction in a way that she considers to be inaccurate. And so, she draws to your attention, two months later, some of those inaccuracies and nothing changes. By this point, had you taken the opportunity of speaking to Dr Inkster outside the IMT and finding out some of the history?

A No, I have not.

Q Why?

A I don't know.

Q Well, why do you think? It's five years later. What's your reason? Can you remember why, or---

-

A Five years down the line, sorry, I can't.

Q Because it does feel that you weren't particularly interested in her views. Is that fair?

A There were members of the IMT that were fitting into that. I'm not entirely sure how Dr Inkster fitted into the whole ecosystem that was the infection control.

Q But Dr Kennedy was quite clear that we shouldn't think of an IMT as a meeting. We should think of it as a team. Would you agree with that?

A It's a team.

Q Yes, and you've replaced the chair of the team. At the time, she was the lead infection control doctor. Am I right so far?

A Yes.

Q Yes, and soon after that, she resigns. Are you aware of that?

A No.

Q You weren't told that she had resigned as lead infection control doctor?

A I might have been told, but there were multiple changes.

Q And she was replaced in due course by Professor Leanord. Is that something you're aware of?

A You would need to ask Professor Leanord then.

Q Well, why was he coming to your meetings?

A He was the infection-- He was the infection control person in the meetings, in microbiology.

Q Yes, but he-- the previous infection control meeting had been Dr Inkster, and she is replaced by chair by you. She attends one meeting. She stops attending, and then along comes Professor Leanord. You didn't think to ask what had happened to Dr Inkster?

A The impression I got was that she wasn't well. Therefore, I don't know.

Q But why didn't you ask her?

A I do not have a relationship with Dr Inkster.

Q Well, if she's sending you emails, you could email her.

A I cannot answer.

Q Well, I think I have to press you because one of the problems with this whole story, if I can call it that, and the reason, I suppose, that a matter of weeks later, this Inquiry was established is that there was considerable public disquiet about the management of infections in the Schiehallion Unit. Would you agree with that?

A When you mention public

disquiet----

Q Disquiet. So, before September '19, when this Inquiry was established, would you agree there had been considerable public disquiet, whether justified or not, about the infections in the Schiehallion Unit? Would you agree with that?

A It depends what you mean by public disquiet.

Q Well, patients and families had contacted the media. There had been questions asked in Parliament. There had been press reports, and indeed, there had been the whistleblowing going on in the hospital. I'm assuming you were aware of all of these things.

A Not of all of them, no.

Q Right, but you're aware of the fact there was public discussion in the media and in the Parliament?

A Yes.

Q Yes, right. So, one of the issues, and I'm sure that there are many, is whether that public disquiet was justified. Were you aware of that at the time, in August/September 2019?

A After I'd taken the chair, certainly we have asked for Health Protection-- Scottish Government support to ensure that we have all the right processes in place and we were

communicating with our patients and all the stakeholders. That's all I can answer.

Q Do you think it would have helped at that point to attempt to find out Dr Inkster's perspective on these things?

A I don't know.

Q Well, looking back on it now, do you think it would have helped?

A From the documents that were in my bundle, I do not know if I would have been able to put the public disquiet to rest.

Q Well, maybe you wouldn't by yourself. I accept that but might you have been able to ensure you had more information if you'd spoken to Dr Inkster?

A I genuinely don't know if-- what difference it would have made.

Q I'd like to move onto the Case Notes Review, if you don't mind. So, if we go to your statement, at paragraph 237-- paragraph 39, you observe that you were asked to comment on the methodology employed in the Case Notes Review, "...and I was puzzled and expressed my disappointment with the methodology, which was dismissive of new world-class standards of investigating outbreaks," and you

produced a commentary. Can we look at that? It's bundle 27, volume 4, document 34, page 364. So, is this your commentary?

A Yes.

Q I think it might be just two pages. Let me go over the next page. Oh, that definitely went wrong. 334-- 364. We'll go to the next page. Yes, it's just the one page. Right. Let's go back to your commentary. When were you-- When did you produce this commentary?

A I think there is a date at the bottom of the page.

Q Well, the version we have doesn't have a date but would it have been around the time that the Case Notes Review authors sent a draft of their overview report to the Health Board?

A As far as I can recall, it was part of the commentary that was----

Q Yes, and it was sent to the authors of the Case Notes Review. Do you understand that?

A Yes. Sorry, I don't know.

Q Right. Well, their position is that they received it along with all the other comments.

A Okay.

Q Now, what I want to do is just to really ask you a couple of questions. What was your understanding of what the Case Notes Review expert panel were asked to do by the Oversight Board?

A My understanding was to look into the infections and to link it with the cause within the unit.

Q And were they-- Was it anticipated when they were set up and there was a protocol to establish them and they were created and given their role, they would do an epidemiological study?

A They were looking at cases, yes.

Q So, that's not what I asked, which was, have I got it right that the essence of your issue in this document is that they haven't done a proper epidemiological study? Is that-- And done some comparison.

A My issue was looking at the causality specifically, so it's paragraph 6.

Q Paragraph 6, that is, when establishing the number of patients?

A Establishing patients at risk and causality.

Q So you feel that they should have used a Bradford Hill criteria?

A It should have been looking at the causality principles, yes.

Q Yes. Now, they provided a response about that, and we'll hear about that from them in a bit, but one of the things that you have in your paragraph, it's the fourth paragraph:

> "Useful additional analysis would be calculating the incidence of infections of interest in the population at risk and establishing the trend of the infection incident and time in comparison with other comparative units within Scotland and/or published data."

And that's something you felt they should have done?

A Standardisation of infection rates. So this would have been helpful, and I think we touched upon, in our discussions, about the impact of deprivation, the impact of mix and all these elements would have been helpful.

Q We will hear from the Case Notes Review in about four weeks' time but it appears from their statements that, in essence, their response to this is that they weren't being asked to do an epidemiological study. They were being asked to do something rather more like your root cause analysis. Is that what you understood at the time?

A I can't remember what had been asked.

Q Because, at one level, it looks as if you are complaining that they're not doing something they weren't asked to do. How do you react to that?

A Therefore, it must have been a misunderstanding, in terms of what they would have been-- they were asked to do.

Q And am I right in thinking that the fifth paragraph is you referring to the analysis that you and I discussed about half an hour ago about Aberdeen and Edinburgh in the October 2019 report from HPS?

A What I say there is that that analysis should have been looked at, yes. However, the point you make, which is, actually, it's a different piece of work they've been asked to carry out.

Q Yes, okay. Right, perhaps since you've mentioned this, we could ask you what your thoughts are about how would you go about identifying a comparative unit to the Royal Hospital for Children?

A I think I put it in my statement what would be helpful, and it's based on the practice from the cancer services whereby we establish datasets and we compare on a

prospective way how we fare against one another.

Q And so what would be the places you would compare the Royal Hospital Children Haematology cohort with?

A To the likes of Great Ormond Street or any other units that----

Q So would it be places like Great Ormond Street, Leeds, Oxford, Cardiff and the Vale, those sort of places?

A Yes.

Q Right, okay. Now, if we can take that off the screen and go back to your statement, please, page 237. I really wanted to ask you a couple of questions around the first-- the paragraph then. Now, you've mentioned whole-genome sequencing in your first sentence and then you say:

> "The findings do not support the hypothesis that the hospital's environment in the hospital was the cause of observed infections amongst hepato-oncology patients."

So, what I wanted to ask you is, "What was the cause of observed infections amongst these patients?"

A I think we-- in the course of the morning, we came to the understanding that we could not identify a single cause.

Q What if there was more than one cause? Why didn't you keep looking?

A And there comes a point where actually you just simply need to put the investigation in place and continue, and the whole-genome sequencing, the subsequent ones, was trying to identify if there was anything that could elucidate that.

Q Would it be reasonable to use whole-genome sequencing to backwards analyse the previous infections before you were appointed and Professor Leanord joined the team?

A I think it has been used to that end, yes.

Q Is that a reasonable approach, from your point of view?

A I think it's important to look and identify if there's anything that we missed just through the existing investigations at that point.

Q Are there any limitations that you think of, or advantages of going back and looking at the previous infections before you took over the chair using the system of whole-genome sequencing?

A In terms of limitations?

Q Well, and advantages. Why would you do it and why-- what's the positives and the negatives?

A I think, if, for instance, we identify a source within any of the environmental samples, it would help us point and focus even more the investigation and ensure that the control processes were adequate. So it's, again, controlling the reservoir of infection.

Q Would a failure to identify a single source of environmental infections entitle anyone to conclude that there was no linkage between the environment and any of the infections?

A It's a statement of fact that we could not identify it through the tests.

Q But are you entitled to go onto that and then say, "There is no link between the environment and any of the infections," apart from the ones you do find the link?

A It is a statement of fact of what we have or we have not found.

Q Well, I'm trying to understand what you found and what it means because I understand that it might be possible to find some links and not find other links, and that would tell you there is a link where you find there's a link but where you don't find a link, are you entitled to say, "There is no link. There is no connection. There is no basis to find an environmental link in this unit"? Is that a conclusion that's reasonable to take?

A So, the question is, have we looked hard enough, have we sampled sufficiently? So it's looking at the kind of investigative methodology we used to identify it.

Q And do you feel that it is?

A I relied on colleagues to ensure that we have been investigating as thorough as we could and we had processes going forward to identify it.

Q Right. Could we go, please, to bundle 14?

A I think I need a break, sorry.

Q My Lord, I only have one question before the 10-minute break, so if the witness wants a break now, then I could do the 10-minute break at this point.

THE CHAIR: Could I just check, Dr Crighton, you would----

A If it's one question, because I don't know how long it's going to continue.

MR MACKINTOSH: Well, I think the best thing to do is that, if we break now, my Lord, I'll check the room for the remaining questions and then we start again in 10 minutes.

THE CHAIR: I mean, as, I think, I indicated, we had just planned for the morning. I haven't been intervening because I thought we're----

MR MACKINTOSH: We're nearly there.

THE CHAIR: We're nearly there. However, we will----

A I just feel my heart rate going up because of (inaudible).

THE CHAIR: Let us take a break----

THE WITNESS: Thank you.

THE CHAIR -- and we'll come back, give you an indication of whether there's more questions and how many, but we'll take a break now.

THE WITNESS: Thank you. Thank you, my Lord.

(Short break)

MR MACKINTOSH: I just have one question for the witness.

THE CHAIR: All right.

THE WITNESS: Thank you for your indulgence.

MR MACKINTOSH: Not at all.

THE CHAIR: Not at all. I mean, as I said at the beginning, I want the witness to feel that she's in control. I understand from Mr Mackintosh that there's just one more question he wants to ask.

THE WITNESS: Thank you.

MR MACKINTOSH: This question arises from one of the core participants and it relates to the information that's ultimately passed on to (inaudible). Now, if I put this document on the screen, you should be seeing it in front of you and I'll describe what it is. So, it's bundle 5, page 391. It's an email, the bottom of the page, from Craig White of the Scottish Government. You haven't seen it before in your bundle.

A No.

Q So I'm going to take it through slowly. It's an email from Professor Craig White of the Scottish Government to the patients and families group on the 16 November 2019, which of course is just after you've had your last IMT. And in it, he describes a series of reassurances about the water supply, and on the next page, we see at the top a discussion of how an independent engineer had confirmed that the water is wholesome by reference to the definition for normal public water supplies, and it lists all the sampling techniques that are being carried out, and he says he's going to get more information on water safety, on the frequency of sampling, and the tests from sampling.

The reason I put that up is because this message, I think, was important to the families, but-- and, indeed, it comes at a time when I think, as you've already observed, the number of gram-negative bacteria and pseudomonas being found in the water was significantly lower, but, as we discussed this morning, there was the atypical mycobacterium found in the water supply inside the filters earlier in the summer. I just wonder whether you feel that this level of-- this assurance that the water supply is wholesome was appropriate, given that, as you said in your evidence, you needed the control measures, including the filters, for it to be safe to the patients.

A So, I think if I'm-- having worked with Scottish Water, part of my normal on-call, we know that the water is not sterile, of mains water and you will have seen documentation that describes what that means. So there are----

Q We have had evidence on that.

A Yes. So, there will be bacteria, the level of bacteria, the type of bacteria and how that is controlled. Therefore, you need go back to the water and the experts to describe the components that they make, that

judgment, but a wholesome water is not a sterile water, it's actually-- What does it mean? In terms of certain levels that-- and making sure that the parameters that defines wholesome water remain.

Q But I suppose the question is, at this point in time, at the end of the IMT, and as you explained today, what made the water safe to the users in the ward was the point-of-use filter at the end of the tap because chlorine dioxide is important too, but it's the point-of-use filter that is the barrier, and that's what you said this morning. Have I got that right? You're nodding, yes.

A Yes.

Q And what I'm wondering is whether you're comfortable with this level of assurance to the families, these sort of terms being used, "wholesome", when the only reason the water is safe or one of the most important reasons the water is safe in the ward is the filters being fitted to the taps and, therefore, the implication is without the filters, it wouldn't be safe? Do you feel this is a sufficiently complete level of communication?

A I would take it in the round to incorporate-- In my reading, just having seen the document here from Professor White, I take it in the

round, so the water as it is, to ensure that it meets the kind of safety aspects of a vulnerable population has additional components in place, and there is a-- just the addition of something----

Q The previous page----

A -- so beyond going-- I think it comes to the issue you mentioned is, you know, keep looking and ensure that it remains that way. That's my reading.

Q I think that's probably everything, my Lord.

THE CHAIR: Dr Crighton, that's now the end of your evidence. Can I express my thanks for your attendance today, running over a little longer than I had indicated to you, but also for the preparation of your written statement, which is part of the evidence before the Inquiry? So, thank you for both these components of your evidence, and you're now free to go. Thank you.

THE WITNESS: Thank you so much, my Lord. Thank you.

THE CHAIR: (After a pause) Now, I don't understand we have any further witness today.

MR MACKINTOSH: Our next witness, my Lord, will be Dr Inkster on Tuesday. It's worth observing that Dr Inkster produced a rather long statement. I'm not intending to go through it line by line, but it probably bears reading before the hearing.

THE CHAIR: I think we've set aside two days.

MR MACKINTOSH: We have set two days.

THE CHAIR: Yes, right. Well, can I wish everyone a good weekend, and all being well, we'll see each other again on Tuesday.

(<u>Session ends</u>)

13:50