SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
19 August 2024

Day 23
Tuesday, 17 September 2024

CONTENTS

THE CHAIR: Good morning. Now, I think we're ready to begin.

MR CONNAL: We are, my Lord, with Professor Craig Williams.

THE CHAIR: Professor. Good morning.

Good morning.

THE CHAIR: Now, Professor Williams, as you know, you're about to be asked questions by Mr Connell, who's sitting opposite you but, first, I understand you're prepared to take the oath.

THE WITNESS: Yes, I am, my Lord.

Professor Craig Williams

Sworn

THE CHAIR: Thank you very much. Now, Mr Connell.

Questioned by Mr Connal

MR CONNAL: Yes. Good morning, Professor Williams. I think you have a witness statement that was prepared for the Inquiry. Are you content to adopt that statement as your evidence here?

A Yes, I am. I have seen some documents and emails since I prepared the statement, which will hopefully allow me to clarify some of the areas in the statement, but I'm happy that the statement is accepted.

Q Thank you very much. Well, we'll-- I will-- As I go through your evidence, I will tend to use, in the mean, your statement as a guide to where we are at particular points. So, by all means, if there's something that you're asked about and you feel the need to add something else, please just do so in response to an appropriate question. Can I just check: you were employed by what became Greater Glasgow and Clyde Health Board from, what? 2002? Is that right?

A Yes. I started at Yorkhill Hospital as a consultant microbiologist in 2002.

Q And you ultimately left-- Now, my note simply says in 2016. Was it March? Can you remember?

A I think it was April when I finally left. March/April of 2016.

Q March/April of 2016? So, your involvement in the issues that the Inquiry is concerned with really covers the period up until that date. Before I turn to your statement, I wonder if I could ask you rather more generally about one or two things, if you don't mind. One of the things that you say many times in your statement – and others have said similar things – is that you seek information-- and let me just use, as an example, the ventilation validation certificate for Ward 2A, and I'm just using that as an example, from something called the Project Team, and you don't get what you've asked for.

You don't get the certificate.

Now, I wonder whether, from your experience with the board, you can help us understand this at all because, from an outside perspective, it's very odd that some reasonably significant players are saying, "Just give us that document, please," and it's just not happening. Can you help us at all as to how that actually worked?

A Yes. So, the validation that I think we were all referring to was part of the HTM 03-01 process, whereby the buildings as a whole are reviewed by a group of expert external engineers who ultimately look at the totality of the systems and how they work together and come, on the basis of a very long and complex report, to a conclusion.

Q Well, I think we've heard from other witnesses what the technical meaning for validation was. What I'm keen to see if you can help me with is how does it come to be that part of the board is saying to somebody else in the board, "Give me this information, give me this material," and people are just ignoring you?

A They weren't ignoring us. They were reassuring us that the validation had been complete and was, as far as they were concerned, completed. That occurred in a number of ways: by email; I think a member of the Project Team attended one of the acute Infection Control committee meetings at the request of the Infection Control team to basically bring us up to speed as to where we were. So, we were being reassured throughout the entire process that the validation had been done and we had nothing to worry about.

Q Well, I understand your point about reassurance but in a number of places in your statement and a number of places in the statements of lots of witnesses, people are saying, “We went to try and get the validation certificate for whatever ward they were interested in. We asked the Project Team. We never got it.”

That's the kind of thing that you say in your statement at various points, and we can go there if need be. How does it come to be that that happens? You're saying, "Give me the validation certificate," and somebody is just not giving you it?

A I don't know. We wouldn't normally have seen the validation certificate as such. We would have seen the-- basically the summary of the validation certificate, and the summary of the validation certificate was being relayed to us by the Project Team, who were saying, "The validation has been formed, and it's okay."

Q When you get that kind of

situation when you say, "I want to see the evidence. I want to see something, paperwork, whatever you want to call it," whether you would understand every technical engineering detail in or not doesn't matter, but you want to see the paperwork, should you not escalate that to somebody who can grab this person by the ear, bring them in and say, "Hand over the certificate now" ?

A I mean, it was escalated on a number of occasions through the board Infection Control committee meeting. You can see in a number of the minutes that we're saying that, "The validation is awaited. The validation is awaited." So it was raised at the board Infection Control committee, which is basically the top of our escalation.

Q And, still, someone else in the board was not producing it?

A Yes.

Q And do you remember doing anything about that unsatisfactory situation, where people were being asked to produce stuff and not producing it?

A As far as I was aware, it wasn't an unsatisfactory situation, because if there'd have been any suggestion that there was any problems with the validation or that the validation hadn't been done, then that would have been something that would have needed a detailed follow-up. The fact that we were being reassured by colleagues in the Project Team that the validation was there, it had been done appropriately and it had been done to the appropriate standards-- We accepted their assurances that this had been done.

Q When you say, "Colleagues in the Project Team" -- because one of the issues that this Inquiry has is that people generally say, "We asked the Project Team" as if it was some kind of individual. Was it an individual or more than one individual that you were contacting?

A I think it's a number of individuals. I think there's an email from Jackie Stewart to one member of the Project Team. There were other members of the Project Team mentioned in board Infection Control committee meetings. So they were individual members. There was no generic Project Team as such. It wasn't just sent to a kind of generic email box----

Q Do you remember anybody in that team who gave you an assurance about validation?

A There is an email to that effect, but I can't remember the name of the individual on the email.

Q Mm-hmm. The reason I'm asking that is that it looks a bit odd from an outsider's perspective that part of the board is saying to another part of the board, "Give me this information," and it's

not-- people are giving assurances, but they're not producing the goods. They're not producing the certificates. I mean, in fact, at one of the board committee meetings – we can look at these in due course – somebody even suggested, if I have the note right, "Why don't we write a letter to David Loudon," who was the project director, I think. Do you remember that?

A I remember writing to David Loudon about the episode around the validation-- the use of the PPVL rooms prior to the hospital opening, but I don't remember people suggesting we write a letter to David Loudon about the validation prior to people moving in.

Q I'm just trying to understand this in general terms, Professor Williams, because when we come to look at your evidence, you start to tell us about going into various wards and discovering things that simply aren't right. Tiles not hung properly, obviously no HEPA filter and stuff like that, and musing to yourself, “Well, how could something possibly have been validated, as we understand that term, with that state?” which must have made you think, “This is all very odd if I'm being told, oh yes it's all been done, but I'm finding evidence otherwise.”

A Yes, it was it was very odd, and it was difficult to see – at the point we got into the hospital, I could see the the lack of things like HEPA filters – that the validation could have been either done or passed.

I don't know whether it'd be helpful to draw an analogy. I mean, the lack of a HEPA filter in one of these rooms – to take an analogy of picking a car, for example, up from a car dealership – is not like there being a scratch on the dashboard. It's like going to pick the car up and there's no wheels on the car. These are basically fundamental problems with the rooms. So, as soon as we accessed the hospital, it was pretty clear that there were fundamental problems in a number of the ventilation systems.

Q Which suggests that the assurances that you were being given that validation had been done were, to put it no higher, not accurate.

A That would be the conclusion that I would draw, and I think there's also one or two emails from Estates colleagues who actually highlight individual tests within the validation that should have been performed that we subsequently found hadn't been performed, but at the time we took the new hospital on, I think this view was reflected by some of my colleagues. I mean, Dr Peters, I think, said we expected better. I think Dr Inkster will say it was a brand new hospital, we didn't

expect any of these problems. So we were, basically, over a period of about four or five weeks, hit by pretty much a juggernaut of problems with the ventilation system.

Q So, it's probably quite a-- it's an interesting phrase of yours, "Hit by a juggernaut of problems," might suggest that anyone who says, "We expected better from a brand new flagship hospital" would be correct?

A Absolutely, yes.

Q Okay, let's leave validation for the moment, Professor Williams. We'll pick up in your statement where you touch on a number of these issues if need be. Let me ask you another general question, if I may. Now, this is about the way that Infection Control was or was not involved in the hospital build and design. Now, I'm going to ask you a number of detailed questions as we go through your evidence about that, but I'd like to take this generally, first of all.

If I simply take, for the purpose of my question, that you say, "Well, I was not the person responsible for signing off on the ventilation design of the Queen Elizabeth Hospital," which is a paraphrase of your position, I know, but just take that for the moment. I wonder if I could ask about this? We've heard from various witnesses about the idea that infection control should really be at the heart of a hospital because of its importance. Now, if the idea was that infection control should be at the heart of everything, would you agree that it would be sensible to put in place some significant involvement by someone with an infection control hat in the process of designing and building the hospital?

A I think there was involvement of people with the infection control experience throughout the process. At the beginning, I think the original specifications at high level were drawn up by Annette Rankin, Dr Redding and Dr Hood, and I think Jackie Stewart, the nurse consultant, was appointed to the Project Team. So there was a continuous presence of somebody with infection control experience. There was no expectation that one individual would have knowledge of all the complex systems which go into designing a new hospital. So the nurse consultant role was as a conduit between the Project Team and the Infection Control to allow any questions to be raised and appropriately answered.

So there was actually Infection Control involvement from the beginning of the project.

Q Well, I understand that there was an Infection Control nurse who was allocated that role, but I'm thinking more of how you-- how, if you were trying to

plan this properly, you might ensure that not just queries were answered, but somebody was overseeing and ensuring that infection control was built into every stage and every discussion. You say, "Well, one person wouldn't necessarily have all the knowledge," and I understand why you say that, and you make the point in your statement at various points that you didn't have engineering expertise equivalent to what was in, for instance, your Estates colleagues. But would it not have been sensible to have somebody allocated to lead and coordinate Infection Control input into all of these exercises, calling on other expertise as required, as circumstances allow? With the benefit of hindsight, would that not have been a good idea?

A That was the case because that was the role that Jackie Stewart, the nurse consultant, was supposed to have in the process, and in terms of the documentation around the SHFN 30 for large builds, the-- there is a clear section in that document which outlines the responsibilities for undertaking the HAI-SCRIBE process stages 1, 2, 3 and 4, and it relates to the project sponsor appointing somebody to be responsible for signing off those documents, and I think it's the project manager who, in that documentation, has the responsibility for undertaking that role.

Infection Control's role in the document is advisory supporting. The actual authority to sign off those SCRIBEs is delegated – and I think we may well come to it later – to-- I think it's the the project manager in that document, SHFN 30.

Q Does-- Your answer, I think, suggests that the role of Infection Control wasn't as significant-- playing as significant a part as might be thought desirable? Is that not fair?

A I think from our point of view, the Infection Control input was, as we were requested and as it was outlined in the documentation, we had a continuous presence of a nurse consultant, but at the beginning of the process, there was a lot of questions asked, which we largely dealt with by Dr Inkster, Sandra McNamee, and myself in terms of sanitary fittings, taps, things like that.

The specifications for the original build at the hospital were clear in the guidance in terms of what should have been provided in terms of ventilation in the HTMs and SHTM and SHBN 04-01. So, at the point of inception of the hospital, then the guidance covered all of the essential features of the hospital and the level of the detail would have been provided by the guidance, not by individual members of the Infection

Control teams.

Q And who was responsible for making sure the guidance was implemented?

A That would be the Project Team.

Q Well, but the Project Team aren't focused on infection control, they're focused on getting the job over the line, aren't they?

A Well----

Q Do you not need somebody to make sure infection control is dealt with?

A The Project Team were responsible in the SHFN 30 and infection control was part of the project throughout from the inception from the early days of Dr Redding and Hood through Jackie Stewart, with communications as required from the Project Team through ourselves and then, ultimately, ending in my involvement after the decision was made to move the Bone Marrow Transplant Unit and the ID unit into the hospital tower.

Q Yes, which comes a little later in the sequence. Part of my reasons for asking these questions, apart from trying to think of how things could have been done better, which is always something that an Inquiry does, is that the value of having somebody senior in Infection Control keeping an eye on overseeing, kicking, pushing, whatever needs to be done, might have led people to think that if you were the lead ICD, you must have been doing that, but you say you weren't.

A No.

Q Can I just ask you a couple of related questions? I think I suspect I know the answers to these, but if you don't mind, I'm going to ask you anyway. Am I right in thinking that you had no detailed involvement in the negotiation and agreement of the construction contract between the board and Multiplex.

A Yes, that's correct. I had no involvement.

Q And did you get involved in discussions about precisely what Multiplex were contracting to deliver?

A No.

Q Thank you. Can I ask you now about another point I think you were aware was going to come up and have thought about a little? Am I right in taking from your statement that you're not a great fan of constantly sending emails to people with lots of detail on it? That's not your style.

A I wouldn't say that. I think the number of emails needs to be appropriate to the conversation that you're having and the communication that you want to have with people. So, on some occasion, it's necessary to send very clear emails and I think, again, there's examples in the bundle when I was trying to communicate

with the Project Team about the need for clarity around what guidance was being applied to the PPVL rooms at the time. There was a very clear statement of what I was asking. In other emails, you're responding to a conversation or a very short previous email where people are just asking for some clarification or for your brief opinion, in which case the email will vary depending on the type of exchange that you're having.

Q I think you're probably aware that there have been statements from a number of witnesses suggesting that you were not keen on seeing everything written down. Is that not correct?

A No, that's absolutely not the case. I would never suggest that, and the reason I can be reasonably confident about that is because it's genuinely not what I think. Infection control, particularly in Glasgow following the Vale of Leven Inquiry, was a very scrutinised service. We were scrutinised externally by Health Protection Scotland, the Healthcare Environment Inspectorate and by the policy unit of the Scottish Government, and there were a set of standards the Healthcare Associated Infection Standards produced by Health Improvement Scotland which indicated very clearly the structures of the meetings that we needed to have, the reporting systems that we needed to have.

Far from saying that we shouldn't be writing things down, we were actually judged externally by what we did write down, not what we didn't write down. So we had to raise the appropriate issues, there had to be evidence of escalation through the processes. The meetings were not verbatim, they weren't transcripts, but they were there to evidence the conversations that happened at the meetings and prove-- provide a point of reference to anybody looking at it to say, "Yes, that was raised at that point and then it was subsequently raised at the other meetings." So I cannot imagine that I would ever tell anybody that these things shouldn't be written down.

The two aspects of Infection Control business are really the routine business, which is covered by the a senior management team meeting which is minuted and a document is made of decisions. The other ad hoc business of the Infection Control team is managing outbreaks, and that is minuted and documented through the IMT process. So each of the processes we undertook as Infection Control teams had very clear governance routes, had very clear minutes, and were-- the documents were widely available.

Q So did you not say to Dr Peters, "You're in Glasgow now, we don't

write things down because of inquiries and the like"?

A I have absolutely no recollection of saying that, and I can't even see why, in the context that she raised in terms of prophylaxis for meningitis, why that would be in any way appropriate. Prophylaxis for meningitis is one of the most standard infection control procedures that we undertake. It involves giving an antibiotic to people who've been exposed to meningitis bacteria. There's a very clear protocol, a very clear SOP. There would be no reason why in that context I would ever imagine saying, "We're in Glasgow now, don't write things down." Also, that's not the conversational style I have, so I just don't recognise that comment at all.

Q I think you do accept, do you not, that there were, before Christine Peters came on board, meetings of Infection Control doctors prior to the SMT meeting in Infection Control which were not minuted and which then became minuted after she complained there was no record?

A Yes, they-- just just for clarity, the meetings weren't prior to the SMT, they were between SMTs. So between the SMTs, we had meetings of the Infection Control doctors and the Infection Control nurses which fed into SMT process. The meetings for the Infection Control doctors, when we designed the system, were deliberately not minuted because it allowed colleagues-- I mean, sometimes, being an Infection Control doctor, as you've probably seen from the documents before, is a pretty lonely place. Sometimes you just need a space to talk to colleagues and put opinions to colleagues, but there was also reference previously, particularly in South Glasgow, to concerns that there was separate decision-making between Infection Control nurses and Infection Control doctors.

So, we were always very clear in the process that the decision-making arena was the SMT, where doctors and nurses and the Infection Control manager were present, and that the conversations around the Infection Control doctors and also the Infection Control nurses' meeting were reflected in the SMT minutes, but not minuted.

Dr Peters, very shortly after she joined, raised concerns about this. She requested a meeting with myself and Mr Tom Walsh, the Infection Control manager. The only concern she raised with me at that point were the minutes around the Infection Control doctor meeting, and given her kind of real concerns around that and the fact that I didn't see it being a major drawback – although I could see some drawbacks to

it, which I'll come back to in a minute – that I agreed that we could minute the Infection Control doctor meetings, and from that point forward they were minuting.

The system had been in place, I think, since 2009. There had been two or three other Infection Control doctors, microbiologists, in the role that Dr Peters had prior to that. Nobody prior to that had raised any concerns whatsoever about the Infection Control doctor meetings and, to my mind, subsequent to the minuting, I think it changed slightly the tenor of the meeting, in that it became a, if you like, a subgroup of the SMT. The discussions became more focused on, you know, writing a minute, things like that, rather than the discussions we'd had previously. But, as I say, when it was requested by De Peters that we minuted the SMTs, we started minuting them.

Q You said a minute ago, just so I understand what point you're making, that Infection Control can be a lonely place. What do you mean by that?

A You're asked sometimes to make decisions as an Infection Control doctor that is within your specialty but you'd like to just discuss with some peers, so it was almost a kind of clinical peer review conversation: "I'm thinking about doing this. Does that seem sensible to you? Would that be okay in terms of what would normally happen?" That kind of conversation, not decision-making conversations or any attempt to influence people. It was advisory and conversational, not directive.

Q And one of the differences, presumably, in the new Queen Elizabeth Hospital, because of its scale, was there was a lot more Infection Control people involved, nurses and doctors, than there might be in much smaller hospitals.

A No, it was the same number of people involved per bed of the hospital. So, the main problem with the new Queen Elizabeth was the complexity of the site. Infection control works relatively well when you have a single site with a single group of people managing it. So, for example, in a district general hospital, patients will move between specialties, so one minute they can be on a medical ward, one minute they can be on a surgical ward. The infection control problems follow them, so one team can then have oversight of the entire building, which facilitates continuity of patient care. One of the problems that we really struggled with in terms of designing the infection control service at the Queen Elizabeth site was the sheer size of the place. There was absolutely no way that one individual Infection Control doctor could maintain oversight of a hospital of that size with that number of complex

specialties. So, again, the same people were involved in the Queen Elizabeth as had been involved prior to the Queen Elizabeth, but they were amalgamated into one site.

Q Now, if we can just go now to your witness statement, we'll use that to walk through the various issues. You pointed out, I think, that you were at Yorkhill before you moved to the new site.

A That's correct.

Q And you set out a lot of information which was very helpful about the microbiology lab and how that functioned. If we go to page 6, you're making a point here about a shift, I think, away from a specialist paediatric focus into something slightly more general. Is that right?

A That's right, yeah. So, the laboratory at Yorkhill provided services entirely to the hospitals on the Yorkhill site, so that would have been the Queen-- Well, there was the maternity hospital and the Yorkhill Paediatric Hospital. Following the merger, the laboratory became of a much larger size because it had to process samples from not only Yorkhill but also from the historical Southern, the historical Victoria Infirmary and all the GP catchment areas, so the number of samples probably increased tenfold in the laboratory overall. Yorkhill was a very small specialist laboratory, so that was definitely a change, and there were discussions about whether a paediatric section was desirable within the new laboratory.

My view was that it should have been, because it gives you a slightly different focus. A number of infections are different in children; a number of infections have significance in children, bacteria that don't have the same significance in adults, but that view didn't carry the day. The view was that a urine sample from a child can be treated in the same way as a urine sample from an adult, so when we moved to the new south sector laboratory, the samples from the paediatric hospital were merged into a much larger number of samples.

Q Thank you, and you point out later that usually an Infection Control doctor is a consultant microbiologist, not inevitably, but usually, and I think we've heard that from other witnesses. Is that correct?

A That's usually, yes, simply because the microbiology role and the Infection Control role cross over to a certain extent, so some but not all of the problems in Infection Control arise from the laboratory. If you're working in the laboratory, you already have knowledge of the laboratory processes, the time it will take to get the samples out. I

retained a role as a consultant microbiologist for Yorkhill throughout my career in NHS GGC. I was the lead Infection Control doctor and the Infection Control doctor for the women's and children's services as well, but I maintained a role as the consultant microbiologist.

So there is leeway in the guidance as to who can be an Infection Control doctor. People with relevant experience in public health, infectious disease physicians, people with that level of experience also undertake ICD roles in some areas, but it's usually the consultant microbiologist.

Q And the role that you held, which is sometimes described as lead ICD or lead oblique coordinating ICD, had a particular slant. Is that right?

A Yes, it's a unique-- Well, I don't know if it's unique. It's an unusual appointment, and the lead coordinating bit, which is used interchangeably through a number of, I think, the documents, reflects the fact that it was mainly to recognise the fact that as Glasgow amalgamated more and more hospitals into a single board, the complexity of the infection control system became more complex.

So, previously, as I mentioned, you would have one Infection Control team in each hospital. The consultants treating the patient would work in that hospital, so they were exposed to the infection control advice on that site only. As Glasgow started to amalgamate, then consultants started to move between sites and they started to raise inconsistencies in infection control advice. Not to any major extent, but just, you know, we're asked to do this on one site, slightly different on the other site. So there was an awareness that the infection control wasn't consistent across the site. That was the main reason, I think, for the inception of the Infection Control doctor role, which I was appointed to after, I think, a number of people applied through a competitive interview process.

Q But it was a lead role in the sense that you became a member of this Infection Control senior management team, which was you and the Infection Control manager and a nursing representative. Is that right?

A Sandra McNamee, the assistant director.

Q And Mr Walsh.

A Yes, and one of the other roles of the lead coordinating Infection Control doctor was to provide advice and support to the Infection Control manager, so he would basically-- We would meet regularly. From recollection, I think we met every Thursday morning along with the lead for surveillance, the lead for the

data team and Sandra McNamee, and I think Pamela Joannidis as nurse consultant, just to basically discuss any things that were going on across Greater Glasgow and Clyde, to monitor progress with the infection control program, which was our document which provided our work plan for the year, and also to basically address the nuts and bolts of the management process, the minutes, the information, things like that. So the senior management team was doing all those things.

Q If we look at page 9, in paragraph 32, you've dealt with the point about the incorporation of paediatric microbiology into a wider adult microbiology, but I just wanted to ask you about the tailpiece to paragraph 32, just to see if you can assist us at all, because it's mentioned by at least one other witness that virology and mycology were ultimately sent somewhere else, and you say here it's more difficult to obtain a complete picture of the infectious processes going on, particularly with complex patients. Is that correct?

A Yes, that's my opinion on that. In Yorkhill, for the Schiehallion unit, we used to have an MDT once a week. I think it was on a Friday.

Q Now, just so we make sure we have a note of that, a what every week?

A It was a clinical multidisciplinary team meeting with the microbiology team, the clinical team and the nursing team, mainly looking after the haematology patients on the Schiehallion unit. When we were at Yorkhill, we had a number of clinical scientists. One was involved in the processing of mycology samples. One was involved in the specialist virology we did. We weren't offering a full repertoire of virology services; we were offering virology relevant to the very immunocompromised group of transplant patients.

So, when I attended the multidisciplinary team meeting in Schiehallion, I was accompanied by the clinical scientist who had been doing the mycology testing, the clinical scientist who had been doing the virology testing, and I had oversight of the bacteriology as well as those two things, which actually meant at that meeting we had an awful lot of detail available, not only about tests that had been completed, but because of the nature of microbiology and some virology, there's inevitably a delay between the sample receiving the laboratory(sic) and the result being available, so we would call those interim reports. We had ready access to the actual state of the sample at the time we were attending the meeting. As those samples moved off-site, we were more reliant on getting the final results. It

became more difficult to collate all the information. We managed to do it. I mean, we weren't concerned that there was any risk to patients, but the process just became more complex than when it was all contained within the one laboratory site.

Q Just for completeness, mycology is focused on, in layman's terms, fungal infection.

A My apologies, yes. Mycology is based upon the diagnosis of fungal infection, so it involves growing fungi; it involves molecular tests looking for the presence of fungal DNA and other parts of funguses in either blood or sputum or other body fluids, but it's a diagnostic specialty focused primarily on, as you say, fungi.

Q Thank you. Now, can we move on to page 10? I just want to tease out a little possible contradiction in the way words are used. You explained to us you were a member of the senior management team for Infection Control, which was you, Mr Walsh, Sandra McNamee, but in paragraph 37, you describe your role as coordinating, not managerial. Seems a little odd to be sitting on a senior management team but not describing yourself as managerial. Can you help us with that?

A Yes, the contrast is between the Infection Control service and the Infection Control doctors who are actually consultant microbiologists. So, the sessions for the Infection Control doctors in the sector teams were people who had a split role, as myself, between Microbiology and Infection Control, but the balance was slightly different, so whereas I was half-Microbiology and half-Infection Control – again, the Infection Control time roughly split between the coordinating role and my individual role as Infection Control doctor for the children's hospital and subsequently the women's and children's directorate – the microbiologists had a split of usually about eight tenths of their time doing clinical microbiology and two sessions of time doing infection control. The consultant microbiologists' contracts were held by the diagnostics director and were managed by the head of microbiology, so I was not involved in the appointment or the selection of any of the ICDs provided to the sectors. I kind of deployed the time on the ICDs that I was given, and again, that system had been in operation since I started in the role in 2009, and there'd never been any significant problems with either obtaining Infection Control doctor sessions or any tension between the Infection Control and the Microbiology role that I was aware of.

Q That's the point you mentioned, just for completeness, at

page 11 of your statement at paragraph 40: you say the role is unusual in that the lead Infection Control doctor couldn't choose their own team but could only deploy the individuals made available by another individual who was clinical head of Microbiology.

A Yes. When I say "deploy", that probably sounds a little bit grandiose. So there would be a conversation with the head of Microbiology; they would say, "Dr X wishes to move on from Infection Control." Most people stayed for two or three years. Some people stayed for longer. But, for example, I think the Infection Control doctor, prior to Dr Peters taking up their role, expressed an interest in gaining more experience in the reference laboratories, so they moved to north Glasgow, where the reference laboratories were situated. That means, as they'd taken up that additional role with that, they didn't really have time in their job plan to continue with the Infection Control, so a conversation was held amongst the consultant body and somebody usually offered to come and be the Infection Control doctor. That information was given to me by the head of Microbiology, the clinical lead for Microbiology, and I then knew who was coming and made sure that they fitted into the teams.

Q Can I ask you an unconnected question? In paragraph 46 on page 12 of that paragraph, you talk about ensuring, if there's building work, it's done safely and infection control precautions are implemented. Is it correct to say that, therefore, ICDs were involved in HAI-SCRIBE processes?

A Yes. So, the document basically outlines work that's done in an existing hospital in terms of modification and also, in the sections I alluded to earlier on, outlines the process for a completely new build. I mean, if it'd be useful for me to give you an example, I was involved in a very complex HAI-SCRIBE process in Yorkhill.

So, the bone marrow transplant rooms in the Schiehallion unit at Yorkhill needed to be refurbished and replaced, which was obviously a relatively high risk procedure from the infection control point of view, which actually needed very close management, particularly as Dr Gibson's view wrote that we needed to continue transplanting throughout that period because of the clinical pressures on the transplant program.

So, the HAI-SCRIBE process there involved basically setting out the work that we needed to do, identifying that it was high-risk. So, in that case, we had to maintain negative pressure throughout the work area to make sure that there was no ingress of any dust or fungal

spores into the functioning unit. We involved-- myself and the Infected Control Team at Yorkhill at that time and the ward team, were regularly monitoring the security of those arrangements. Again, it was mainly making sure that the seals around the visqueen plastic that was cordoning off the area were remaining sealed, and that the bulge was bulging inwards rather than outwards soo you could actually tell that the processes were in place. The contractors had a much more sophisticated way of monitoring that, but we were basically just walking past the building every couple of hours just to make sure that that was all in place and immediately bringing the attention to the contractors of any potential problems that we saw.

That is in complete contrast to the New South Glasgow Hospital build, where it was a building site on the existing Southern General Hospital site. We had no access to the building at all during the development. Even towards the end of the build, we were only allowed into the building as visitors with hard hats to be shown around. It was a building site, not a hospital. So, the implementation of the documentation varies dramatically depending on the context to which that documentation is applied.

THE CHAIR: Your involvement in the work at Yorkhill that you've just described, when was that?

A I think that was back in about 2012 or '13.

MR CONNAL: Ah, right.

THE CHAIR: 2012, okay.

A It's when we were in the old Schiehallion unit on the Yorkhill side.

Q Thank you.

MR CONNAL: We're now going to move to discuss the preoccupation period, if I can call it that: the period before the hospital was handed over by the contractor to the board and then, in due course, patients migrated into the hospital, and we start to see that dealt with in your statement at the foot of page 12. You say there:

> "The only advice I recall being asked to provide was basic information on handwashing sinks and fittings in relation to room specifications. [You say] We advised that this should be to the relevant HTM's [and you say]... While there was Infection Control input, we were not asked to provide any further information than that provided by the ICN... as part of the project."

So, that's very early on, is it, in the process?

A That would be very early on.

That would be fairly soon after my appointment as lead coordinating ICD – I think around about 2009, something like that, but very early on anyway. Jackie Stewart would inform us that there'd been queries raised about certain aspects of the specifications of taps, things like that.

I used to and tended to involve Dr Inkster at that point, because I knew she was developing an interest in the built environment. So, it was myself, Dr Inkster, Sandra McNamee, and Jackie Stewart had the conversations. Again, we routinely referred them back to the SHTM because the details of the water and the taps and things are all contained in those documents. We wouldn't-- To my recollection, we never recommended anything other than, basically, "Build it to the guidance in the SHTMs."

The conversations were more, I think, about the availability of the hand hygiene sinks, where this should be in relation to the patient flow. So, if you can put, for example, 10 sinks into a room of this size, where you actually put the sinks is material because you want the sinks close enough to be able to easily access hand hygiene, but not close to any critical areas where you might be making up medicines or things like that, just in case of the splash risk. So, the conversations were more about the distribution of the fittings in the rooms, rather than the actual details of the fittings themselves.

Q It sounds to me, from the process you're describing, as if you – and by that I mean you and your colleagues – were reacting to questions rather than directly involving yourself in what was going on. People were coming to you with issues, and you were saying, "Well, if the question is this, the answer is that."

A Yes, well, we were reacting to specific queries but, again, the large amounts of documentation in terms of specifications, how to build a new hospital, were there in the background, so it was, again, operational modifications to those things which we were answering questions on. That really wouldn't be unexpected, because while the design team might have expertise in the plumbing and the ventilation, they wouldn't have had the expertise in how staff on the ward would use those, how they would relate to patient flow through the hospital. So, we were more in providing the infection control input relating to those, rather than to the detailed specifications themselves.

Q What you're saying, as I understand it, is that your position anyway is that much of the material that's needed to carry out the exercise that was being done is set out in HTM and SHTM documents, which you would use as your guide.

A Absolutely, but it's also important to reference those SHTM documents to the patients that will be using the hospital.

Q Because, for instance, SHTM 03-01 on ventilation has specific provisions for different cohorts of patients.

A Yes, absolutely.

Q Now, you tell us in paragraph 49 that you had a specific role – which was to do with a lab build, not with the general hospital building – and I don't need to ask you about that. Then, in paragraph 50, you repeat your point that your recollections of questions related mainly to hand hygiene sinks and fittings, which we agreed would be to relevant national standards.

Now, in 51, you say that you asked Teresa Inkster to be the ICD link with Jackie to respond to any questions. Now, I just have to put it to you that Dr Inkster has no recollection of you appointing her in some way to that role.

A I think there may well have been emails at that time to suggest that, as she had an interest in the built environment. She would be involved in these discussions, but I haven't had access to any of my e-mails since I left Glasgow, so I can't comment.

Q You think you put it in writing. Did you put it into something called a "job plan" for her?

A No. No, it was just-- It would have been a conversation or an e-mail, probably an e-mail along the lines of, "Teresa, being as you're interested in all these things, why don't you be the first point of contact to Jackie?" It wasn't a detailed job specification. It was just a suggestion that, as she was interested, it might be helpful that she was involved.

Q Now, the foot of page 13 of your statement in paragraph 51, you repeat the point about sinks, taps, fittings, and positioning of hand hygiene sinks, and you say there were no questions around which ventilation should be used, when and how it should be fitted, or any discussions around the details of ventilation or overall water design. Is that correct?

A That's correct, yeah.

Q I wonder if we could have bundle 14, please, volume 1, page 21. Now, what we have in this document, Professor Williams, is a piece of an email from Jackie Stewart to Tom Walsh, Sandra McNamee, yourself, and Pamela Joannidis headed, "Ventilation," and dated 2011 – so long before the hospital opened – saying:

> "Please find attached the ventilation specified so far... I'm meeting with the M&E chaps... to go

into some more detail... this is not how you remember the spec... let me know."

Then there's a discussion about washing machines, which we needn't trouble you with. Does that not suggest that what you say in your statement is not perhaps complete, because you were involved in discussions about ventilation?

A Yes. So, at that time, I was kind of relying entirely on my memory. This is one of the emails that's been made available to me since. My recollection of that meeting is that the ventilation specification was very high-level, that the building will be provided as to HTM 03-01, and there were no particular concerns raised at that. It was built upon the earlier documentation provided by people in 2009, just basically outlining the hospital as it was and the type of rooms there would be.

THE CHAIR: Sorry, just entirely my fault. You were talking about something happening in 2009, and I just didn't catch that.

A So, they were the original documentations describing the input that Infection Control had into the process at that time, with Dr Redding, Dr Hood, and Annette Rankin being involved in those advice.

MR CONNAL: But at least at this time in 2011, it appears you were involved to some extent in ventilation.

A Yes, I had received this email but, again, that was updating me, rather than me being involved in the design as such.

Q Although the email appears to suggest, you know, "If this isn't how you remember the spec, let me know," as if you'd been involved prior to that.

A That's not what I said and, as I say, I wasn't involved in developing any of the specs.

Q Can we look at 23, just in the same bundle, please? Sorry. Yes, here we are, and we see there that there's a list of items: heamato-oncology, a sealed HEPA-filtered ward, 10 negative pressure rooms, and so on and so forth. So, this is what you were telling us about, that you thought it was pretty high-level at that stage.

Q This is the high-level thing and, again, it's listed that it will be compliant with SHTM 03-01 and SHPN 4.

Q Right. 24, please. Now, this, like all email chains, they're very annoying to put up on the screen because they always start at the bottom. Can we just actually scroll up to 25? I think we'll probably see where this comes from. At the bottom of page 25, we see an email from Jackie Stewart, 23 August 2012, so a little further on, to you headed, "M&E Design for New South Glasgow

Hospitals," saying:

> "...technical guys... wondering if you're available to meet with them. They will outline water systems and ventilation systems in a generic format, e.g. bedrooms will have X amount of air changes, treatment rooms will have X amount of air changes [etc.]"

So, it sounds as if you're getting into a bit more granular detail by that time. Is that right?

A Yes, it does from the email. Again, I think from my recollections from that meeting, again, it was very high-level, and I'm not sure if there's a subsequent email from me clarifying some points around the conversation.

Q In fairness, let's see the end of this. So, it's responded to instantly by saying, "Professor Williams out of the office," so we don't need to worry about that one. If we go back to 25-- 24, sorry, we see an email from you back saying:

> "17th would be good... useful to have the detail for both adult and paediatric builds around: theatre suites, haemo-oncology especially the bone marrow transplant areas... proposed airflow..."

Then there's TB isolation rooms. I think if we go back to 25, there are a series of other individual points. So, you've gone back, flagging up, again, at least an element of detail about things that you were keen to see, so I take it you followed up and you went to this meeting, did you?

A Yes, we went to the meeting. I think myself and Teresa Inkster went to the meeting. I don't recall the meeting discussing anything in terms of high-level ventilation or anything of the like. I think it was, again, just general updates of specifications and that all these specifications would be built to the relevant HTMs, SHTMs.

Q Yes. Well, just come back to 24, so we look again at the start of your reply to Jackie Stewart. I mean, you're talking about the BMT rooms and air flows. So, did you know what you were looking for at that time?

A No, we were just looking at general specialised areas of ventilation and saying it would be good to get the detail on any general specialised areas of ventilation that would have been present in the build.

Q The reason I'm asking obviously, Professor Williams, is we know that the BMT rooms, both pediatric and adult, turned out to be problematic in a variety of ways, which we can come to later.

A Yeah.

Q But it looks as if you were at

least looking for some information about it at that early stage.

A They are-- That is the kind of areas that would be of concern to Infection Control teams. So, that would be based upon a kind of list of high-risk areas that you would want to actually discuss in more detail if there are any detailed discussions to be had.

Q And in general terms-- and I may have picked this up incorrectly, so please correct me if I'm wrong. Were you saying that what you were saying is they needed to comply with SHTM 03-01?

A Yes. That would have been the case, and the relevant health building notes attached to that.

Q Yes. Can we look in the same bundle at page 204, please? Now, again, we'll scroll onto 205 just so we see the (inaudible). There's a pretty pointed question from Dr Peters at the top of page 205 saying:

> "How was the design of the new build signed off from an Infection control point of view, i.e. who would be the most appropriate person to speak to to get an overview of design in regard to ventilation from an infection control point of view."

It's a pretty clear question, and the answer we find back on 204, because that was directed to Mr Walsh. Mr Walsh – that's your colleague on the SMT – says:

> "Hi Christine, Craig led on most of this with some input from John Hood."

Which suggests that you had a rather more significant role than you would argue you had.

A I had a significant role from August 2014 when we were informed of the decision to move the adult BMT unit and the Infectious Diseases unit into the hospital. So I can only assume that, because Christine was asking about ventilation, that's what Tom was referring to.

Q But it seems a little odd that your colleague on the SMT is saying, "Well, Craig's the man for this, with some help from John Hood," if you weren't really very much involved.

A Well, I would have been the man for it in terms of the questions around the PPVL rooms and the move of the Bone Marrow Transplant units and the specifications that she was trying to, I think, get at that point, but I wasn't actually the person signing off the input from the hospital. I had no role whatsoever in signing off the building specifications or the infection control specifications for the new hospital.

Q The combination perhaps to an outsider – and perhaps you can correct me – reads a little oddly. You're the lead ICD, so that's fine. Mr Walsh says, "Craig led on most of this," and then in the next sentence he says, "Design sign-off was by Jackie," who's an ICN, so not a member of the senior management team, but does it not suggest that you did more on ventilation than perhaps you now recall?

A No. I had a lot of involvement in the ventilation from-- I think it was August 2014. Prior to that, the only occasions I can recall of having anything to do with ventilation have been demonstrated in these emails.

Q But you can probably understand why people thought you were involved if Tom Walsh says you were involved.

A Yeah. I could see that you would take that from it, as I say.

Q Can we just look at page 75 in the same bundle, please?

THE CHAIR: Sorry, just so that I have an accurate note, have I correctly noted you as-- you could see why people thought you'd been involved before August 2014? Is that what you said?

A Yes, I'd been quite heavily involved since August 2014. So it wouldn't have been unreasonable for people to think, "Well, if you were involved from 2014, maybe you were involved earlier on," but it wasn't an accurate representation of the facts.

MR CONNAL: Can we just look at 75? I'm jumping back, and I apologise that all my questions are not in strict chronological order, but what 75 shows us is an Infection Control meeting held in the Hillington Project Office on Monday, 18 May 2009, so pretty early on in the in the process, with Mr Walsh and various others. Do you know anything about that?

A No. I wasn't at that meeting, and that was before I took up role as lead Infection Control-- I would have been responsible for Yorkhill at that point.

Q Okay. Well, go back to your witness statement, please, at page 14. I just want to ask you about something else that you may or may not be able to help with, but let's see. Can we look at a document, please, bear with me, which is in bundle 12, page 813. Now, let me say straight away that this is not an email that was sent to you. It was sent to various other people, and it dates from 2016, which is after-- Well, actually after you've left, but it's looking back because, by this time, it's become apparent that, to put it no higher, there were quite a lot of issues about ventilation in the hospital, the kind of juggernaut that you mentioned. This is a Mr Seabourne saying, "Well, there's

obviously been an SBAR," and he then says in line three:

> "No matter what the Infection Control people say, they were involved in every aspect of the design."

From your recollection, is that correct?

A I think it depends which period of time he's referring to. I mean, there is some evidence that Infection Control was heavily involved at the beginning of the process in terms of drawing up the original specifications. I think that probably relates back to the document that you just showed at the meeting of the Project Team in Hillington in May. The continuing-- and Infection Control were involved throughout, as I've said, because we had a nurse consultant with the Project Team who was there to facilitate any discussions or input into Infection Control. So, I would say there's clear involvement of Infection Control from the beginning of the process with the original specifications being signed. I think you mentioned----

Q The implication, I think, of this email is that Infection Control had signed off on all design matters that had an impact on patients, which is what Infection Control are about, looking after the patients.

A But, again, I think that refers back to the document you looked at slightly earlier, in 2009, where it says, "This is to sign off Infection Control agreement on the process." It's the one I think was on the screen prior to this document.

Q By this time-- I'm jumping ahead a little bit in your witness statement, but you were asked to look at a document which said that instead of the SHTM 03-01 air change rate of six, a different air change rate, which we've had calculated as somewhere between two and a half to three was to be deployed, and this has emerged. As I understand it, you knew nothing about that document. Is that right?

A I think----

Q Until you saw it in the context of this Inquiry----

A I saw it, and I've also seen an email relating to that in the bundle. I can't remember exactly where. It was basically copied into me, but John Hood was primarily involved in responding to that. Is that the document relating to the reduction in air changes in the renal day unit?

Q Well, yes. I mean, there was an enquiry made about the Renal Unit, which perhaps had specific concerns, but I think this is concerned with the general question of changing from-- advice in

SHTM 03-01 for six air changes as a standard-- every single room to a lower level. So, the implication is that Infection Control were involved in signing off on that change, just to use that phrase generally, i.e. approving it, perhaps risk assessing it in terms of the consequences for patients. Do you know anything about that?

A No, I was completely unaware of that derogation until it appeared in the Inquiry document.

THE CHAIR: Sorry, my fault. Mr Connal, we're talking about the general single rooms at the moment, are we?

MR CONNAL: Yes, we are. I asked the witness, my Lord, first of all, about the general statement of involvement of Infection Control in all design issues and to what extent that was correct, because I think you can understand, Professor Williams, that given that you were – up until March, April 2016 – the lead ICD, somebody might think, "Well, you should know if there was a significant change of that kind," and you say you didn't.

A No, and that would be a reasonable assumption but, no, I didn't. If I had known, I wouldn't have had enough experience to comment on it directly, but I would have certainly sought advice on it.

Q Yes. Can I just take that point from you now because it will probably save us repeating it later on. You're familiar with the requirements of SHTM 03-01 and other HTMs, at least in general terms, but I picked up from your witness statement – and I don't want to put words in your mouth unnecessarily – that you didn't feel you have all of the technical expertise to judge your ventilation systems in situ or the like.

A Yes. That would be absolutely correct, yeah.

Q Thank you. Well, we can leave that document. Thank you. We'll go back to your witness statement. It just paints a slightly odd picture if you don't understand the situation that you're the lead ICD. You don't know about this change, and in your witness statement at paragraph 56 on page 14, you instance an example where you're asked about, "Well, what do you think we should have about ventilated isolation rooms?" and you say:

> "Well, we told them what we thought should happen, and it all disappeared and someone somewhere decided to do something different."

A Yes, and at that point-- I wasn't the lead ICD at that point. I was kind of, I think, attending as the Infection Control doctor for Yorkhill.

Q Just suggests there's a

disconnect somewhere between seeking the advice of Infection Control and actually what happened thereafter.

A I absolutely agree. I mean, the decisions that were being made in terms of the specification were being made outside the Infection Control team. Again, not necessarily inappropriately because if the guidance is very clear in those areas, then-- Again, I mean, our advice would be follow the guidance, but if there was any dubiety or any concern about the appropriateness or the application of those guidelines, then I would have expected it would have been raised with the Infection Control team through the nurse consultant with the team. Again, I wouldn't have had any expectation whatsoever that she could have answered it, or necessarily I could have answered it, but if the questions had been raised, we would have sought expert advice in attempting to answer those questions.

Q Yes. I think I was keen not to be pejorative about the role of Infection Control nurse because obviously they're highly experienced individuals and highly capable individuals, but what you're essentially saying is if an issue of, for instance, departure from guidance on ventilation arose, you wouldn't expect the allocated nurse to be able to answer that and, in fact, you might not be able to answer that.

A No. I mean, if a question along those lines had been asked-- I mean, my-- Hypothesising it had been asked, my normal route for dealing with it would have been to look at the nature of the question, check the guidance in the SHTMs to see if actually the question was there, and it was valid. I would then, kind of, escalate it through our escalation routes either to AICC or BICC, and ultimately ending up with probably the involvement of a senior Estates person or, if necessary, any people with external expertise.

Q And if you went to Estates, because they're the people who manage buildings and maintain ventilation systems, would you, either by yourself or having taken advice elsewhere, not need to be satisfied that whatever they said met the infection control requirements that were your concern?

A Yes. I would be phrasing the question to Estates in terms of the infection control risk, not the engineering specifications because that's their area of expertise, not mine.

Q Well, we can perhaps illustrate your point by looking at the top of page 15, where-- We're coming to the point where you were being asked about isolation rooms and how many and so on, and you say the advice you gave was at

a general level. Can you help us understand what advice at a general level was?

A Yes. So, for example, if you have an infectious diseases unit, you would need the appropriate rooms for isolating infectious patients. I think-- At the early stage, I think there was a change in guidance nationally at some point from building hospitals, as they historically had been built with kind of units of four to six rooms into entirely single-bedded hospitals.

So the conversations earlier on were the number of general single rooms that were needed per ward, for example. So if a patient had Clostridium difficile infection in areas where there's not entirely single room builds, one of the infection control interventions is to manage that patient in a single room. So it's how many side rooms would you need for each routine ward. It was questions of that nature rather than, you know, the detailed engineering specifications of them.

Q So you weren't getting into discussions about things like whether you needed one air handling unit or redundancy so there was a backup in a specialist ward, that kind of thing?

A Not at all, no.

Q Right, can I just ask you briefly about what you say in paragraph 58, where you-- This is a set of minutes, and I don't think we need to dig them out. You say-- You're referring to ventilation in Critical Care, and you're trying to square the requirement for single rooms with the requirement for observation of patients in-- with Critical Care unit-- within Critical Care units. Is that right?

A Yes.

Q And you were talking about, "Oh, well, do we need to build in glass walls, or what do we need to do?"

A Yes.

Q And you say there's a requirement for the same level of protective isolation to be provided in the ICU because if you've got a bone marrow transplant patient who needs intensive care, you need protection for them when they're in ICU. Is that right?

A Absolutely, yes.

Q Yes, and so can you tell us at all, when you're having these discussions, whether you were looking at things like air changes per hour or the pressure differentials?

A No. I think that paragraph is based on my recollections before I had access to the email. So I think the conversations around the Intensive Care Unit may have happened slightly earlier in the process, but in those conversations, it was around clinical observation. So there's a balance to be

made between very ill patients on an Intensive Care Unit being invisible, if you like, to the members of staff working in those units and the need for isolation of the patients.

Most routine isolation can be dealt with by bed spacing. So, again, there's a-- the theory being that airborne infections drop out of the air within two meters if people cough. So as long as the beds are further than that apart, you shouldn't actually have any cross-infection risks apart from in the unusual circumstances of severely immunocompromised or very infectious patients.

So I think this was-- the Critical Care unit was a conversation around trying to square those two competing demands of patient observation and the need to go with the guidance of 100 per cent rooms. I think there's a number of emails in the bundle; I can't recollect exactly where that debate was going back and forward between the clinical teams and the Infection Control team.

Q Can I ask you this, then? We know you weren't involved in the contract discussions or checking what arrangements for, for instance, air change rates had been agreed. When you're coming towards the point where the building is going to be handed over – so we're in 2015, early 2015 for handover and slightly later for patient occupation – was it then part of your role to make sure that the hospital that the patients were coming into had the correct ventilation requirements in place?

A Yes. We would have-- what we had planned to do, had all the ventilation delivered the specification that we expected, we would have moved the systems that we previously had in the existing hospital. So, for example, in Yorkhill and in the Beatson, there were well-established sampling regimens. So we would have actually moved those existing routines into the new hospital.

THE CHAIR: Professor Williams, can I just ask if we could take that more slowly? You were asked by Mr Connell, and we're looking at January 2015, was it part of your role to ensure that the ventilation provision – and I'm now beginning to paraphrase this question – ventilation provision in place was appropriate for the patients who would be accommodated? And I think I got-- and you said yes.

A Sorry, I must have slightly misunderstood that.

Q It might be my fault.

A My fault, I apologise. It was my responsibility for the children's area to make sure that the rooms in the children's area were performing appropriately after the handover of the building, but not to ensure that the specification of the

ventilation had been met prior to that. We had no idea of the quality of the room build during that point.

I mean, it might be helpful to give a little bit of context here. So the phrase was used, "Handing the keys over," I think, by Jennifer Armstrong in one of the-- I was surprised by how incomplete the hospital was at that stage. There was an awful lot of work still going on to fit out the hospital, to bring equipment in and things like that. So, when you walked in, it didn't look like a finished hospital build. It didn't begin to look like a finished hospital build until probably the end-- probably not long before the patients moved in. So it was difficult from the infection control point of view to actually assess the state of the hospital. It wasn't particularly clean at that point. It wasn't, you know, kitted out as a hospital would be. Sorry, I don't know if I'm answering the question here.

MR CONNAL: There might be two separate questions, I suspect, emerging, because we've heard, for instance, from other witnesses at the date of handing over the keys, work on the children's section of the hospital was still-- I think somebody described it still looked like a building site. Is that your recollection?

A I wouldn't go as far as to say it looked like a building site, but it didn't look like a functioning children's hospital.

Q Well, at that point then, you have the adult hospital which is more complete. Was it part of your role to check that the necessary ventilation arrangements meeting requirements were in place in the adult hospital before patients started to come in?

A No, that would have been the role of the Infection Control doctor and the Infection Control teams covering that adult hospital.

THE CHAIR: Sorry, give me that again. That would have been the role of?

A The Infection Control doctor and the Infection Control teams who were looking after that part of the hospital.

MR CONNAL: And as lead or coordinating doctor, did you not have oversight of that?

A I would have expected them to bring any concerns that they had to me again. Again, it wasn't a managerial role. It was not, "You will go and do that, you will go and do that," it wasn't directive. They were autonomous professionals in the area that they were in with, basically, the leeway to deliver whatever infection control advice they thought was necessary in those areas.

Q I think you know what I'm getting at, Professor Williams.

A Yes.

Q We have the handover of the keys, patients are in the wings due to

come in in a matter of months. I'm just keen to understand whether, as lead ICD, you should have been basically making sure everything was ready for these patients in all of the areas of the hospital.

A No, it was a huge hospital and that's why we had different teams working in different parts of the hospital. So I was operationally making sure that the children's area, which was part of my area of responsibility, was to the appropriate specifications, the other team should have been doing that in their areas.

THE CHAIR: Right, can I just-- Sorry, Mr Connal, just so I capture that. There was an Infection Control responsibility as at, say January 2015, to ensure that the respective areas of the hospital-- the ventilation provision in the respective areas of the hospital was as provided as-- was at least as provided for by guidance. Have I got that step correct?

A The responsibility is kind of part of your clinical duties to actually be aware and visit the areas that you're responsible for. There's no responsibility and whereof written down anywhere to say, "You will be responsible for."

Q Yes. Well, I just want to follow your evidence.

A Yes, yes. No, that's fine.

Q What I'm taking so far – and correct me if I'm wrong – whether it's written down or not, you accept that in January, as of January 2015, there was a responsibility on Infection Control clinicians to ensure, in respect of their particular areas of the new hospital, that the ventilation requirements were as provided for in guidance. Now, have I got that right or got that wrong?

A No, there wasn't a responsibility for people to cross-check the guidance. There was a responsibility for people to visit the clinical areas and look at the fabric of the rooms and make sure that they looked as though they were ready for patients to go into.

Q Right, okay. So responsibility to see if it looked as if it was ready. Now your personal responsibility, again, if I'm following your evidence, was limited to the children's hospital?

A The children's hospital, yes.

Q Right. So that's the whole of the RHC.

A The whole of the RHC, and---

Q Right. Sorry, Mr Connal.

A -- sorry, and just for completeness, the neonatal Intensive Care Unit, which was part of the retained estate in the Southern General. So I was responsible for the paediatric hospital and the neonatal Intensive Care Unit because the Yorkhill (inaudible) patients had transferred to join the Southern General's

neonatal Intensive Care Unit. That wasn't part of the new build, that was part of the maternity block which was always on the Southern General.

Q Right. So we should add the neonatal intensive care?

A Yes, the neonatal unit, yes.

Q Sorry, Mr Connal.

MR CONNAL: But that's not the-- what's sometimes called the PICU in the new hospital? This is on another site----

A That's a different ward altogether, yes.

Q And in terms of what you accepted you were supposed to do, were you looking to find some evidence, for instance, that important things like air change rates and pressure differentials were in place or was that not part of your role and the role of the other doctors?

A No, that wasn't-- that wasn't part of the role. Part of the role was basically to walk around and make sure that everything looked as it should, that it was clean that the equipment was stored correctly. Basically, the number of things that you would do routinely as part of your Infection Control duties around the hospital.

Q We can understand this in part, Professor Williams, from the discussion we had earlier about validation, because validation of a ventilation system has been described, broadly speaking, as the client getting someone to check that it's doing what it should do so that they can safely say, "Fine, we'll take it over."

A Yes, that's exactly right.

Q You're happy with that description?

A Yes.

Q So, before you put patients into any particular environment, the ventilation should have been validated?

A It should. It was part of the HTML 301, and I think from recollection, the HTML 301 is entitled, "Building and Validation of," so it's part of the same process.

Q So is that-- was that the point at which you, in relation to the pediatric areas and other ICDs in relation to the general areas, should have first been saying, "Where's the validation?"

A That was the context that we were asking for the validation in, yes.

Q And as I understand it, the significance is that the client doesn't take the area unless somebody says, "Yes, we've checked it against the appropriate standards and you, the client, can happily take it over." So did you not really have to say, "No patients in until validation is established"?

A Again, we were continually assured that the validation had happened by the routes I've said earlier, people

attending, committee meetings, emails and conversations. We had no reason to expect that the validation wouldn't have happened. It's an integral part of the HTML 301 process. So we were never led at any point to believe there was any concerns or any problems with the validation. I mean, with hindsight-- Sorry, my Lord.

THE CHAIR: No. Sorry. Please carry on.

A From my point of view, the validation means that this has been looked at by experts, external experts and is good to go.

Q Right. So----

MR CONNAL: It's a tick in a box. Somebody says, "Yes, here's a report," but essentially, to use your phrase, "It's good to go."

A And----

Q And I'm just wondering how, as an Infection Control operation, you square the need for validation, which you understand, and letting patients in without having any evidence of it?

A Because the SHFN process around the handover and the HAI-SCRIBE process is very clearly documented, and one of the major questions in the SCRIBE process is, "Does the ventilation comply with HTM 03-01?" There's a number of supplementary questions beneath that in the SCRIBE checklist, and the responsibility in the SHFN is very clear in terms of the checklist and the process of HAI-SCRIBE which should have been done by the project manager. We were being told by the Project Team the validation is there. We were not being informed of any problems with the validation. I think it's absolutely reasonable to say, you know, "How far should we have pursued that?" We took it to the board Infection Control committee meeting. We requested information on a number of occasions. I think that's a fair question.

Q Yes, no, I'm trying to follow it through because I follow the logic of somebody sure everything is all right, fine, but the validation has to be done-- I mean, as I have heard in other evidence, validation is only done once. It's done when the ventilation system is put in place, then there can be later verifications or a new validation if more works are done but, essentially, absent those factors, it's done once. So if somebody says it's done, then-- I suppose I'm just struggling to understand why it's difficult to get hold of the paperwork for it.

A I don't know.

THE CHAIR: Can I just take a step back to see that I am following your evidence, which I think is quite clear? The hospital has been brought to the

stage where the contractor says it's complete, and at that point the contractor or whoever is the supervising officer will provide, in terms of the contract, a certificate of practical completion. Now, that's one sort of certification. But you are reminding us that SHTM 03-01, in the version that was then applicable, requires, as you've put it, validation from an independent expert quite over and above what the contract provides. Now, that's what I understand you to have said.

A Yes. I'm not sure whether the SHTM----

Q And that is additional to anything that is required as part of the HAI-SCRIBE?

A Yes. The SHTM, I think – I mean, I've got the details in notes; if it will help, I can provide the details later on – outlines commissioning and validation as two separate processes. I don't think the SHTM specifies as such it needs to be an independent contractor, but I think the SHTM does point out that because of the expertise required to undertake this validation, it's unlikely that any one individual would probably express-- would have the abilities to take those, so----

Q Right. Usually you would then anticipate that the validation would be done by an expert brought in by the board or whoever to do that process.

A Brought in by the person responsible for that process, yes.

THE CHAIR: Thank you.

MR CONNAL: My Lord, I'm conscious of time, and I am about to move on.

THE CHAIR: Maybe just to finally wrap up, we have been using the expression "validation". Do I take it your understanding of validation is the validation requirement arising out of SHTM 03-01?

A Yes.

Q Right.

A If I may refer to my notes, I can actually find it, if that's helpful.

Q I mean, if you wish, by all means, yes.

A So SHTM 03-01:

> "Validation, a process of proving that the system is fit for purpose and achieves the operating performance originally specified. It will normally be a condition of contract that 'the system will be acceptable to the client if at the time of validation it is considered fit for purpose and will only require routine maintenance in order to remain so for its projected life.'"

Q And I guess that you're reading from chapter 8 of SHTM----

A "The validation of specialised ventilation systems" begins on page 114

of the SHTM.

Q Which is in Chapter 8, I think.

A I don't know. I'm sorry.

Q Right. Well, we usually take a coffee break at this point. Can I ask you to be back at five to 12?

(Short break)

THE CHAIR: Mr Connal?

MR CONNAL: Thank you, my Lord. I'm going to move on to a different section, just in a moment, of your witness statement just to show us where we've got to, but I wonder if I could ask you, first of all, to look at one document, which is in bundle 12, page 179. Just, again, I'm just trying to get a picture. Can we look at the very bottom of the page there? I'll explain why just in a second.

This is from somebody called David Bell to a range of people, including Christine Peters, copied to Ian Powrie and various others. So, if we then see-- He's responding to these people. If we go on to page 180, and there's a long discussion, and I'm not going to trouble you with all of it, but Mr Bell is saying in the first numbered paragraph near the top of that page:

> "The ventilation specs have been forwarded to you now by Anne Harkness and these were previously okayed by Craig Williams from IC... If [the system] is currently not working, that's something we're not aware of."

Now, at least the wording of that email suggests that, first of all, you've done something with ventilation specifications – so something more than just general stuff – and, secondly, you've okayed them. Can you explain what your role here was?

A Yes. This relates to when I got involved in the ventilation following the change in specification for the patients moving into the adult Bone Marrow Transplant Unit and ID unit from-- I think we were informed in August 2014. That created problems in terms of, as I mentioned before, the SHTM 03-01 based in the context of the guidance.

So, the SHTM 03-01 guidance states that-- sorry, or the HBN. I can't remember the name of the guidance, but it basically specifically states that, "This guidance does not describe how you would build for an Infectious Diseases Unit or a Bone Marrow Transplant Unit."

The process that's being described here is my involvement subsequent to that email in trying to assess the suitability of the rooms that had been provided as of 2014 for the change in patient use, which was going to happen when the patients moved in the hospital.

And there's a-- I don't know if there's a whole pile of email correspondence with myself, David Loudon, Currie and Brown, and other specialist engineers trying to compare the guidance that has been implemented in the New South Glasgow Hospital with the guidance for the isolation of patients with multidrug-resistant TB, which is kind of an exemplar of an infection spread through respiratory route, which concluded in the professional opinion of the engineers being that these rooms could be used under the MDR-TB guidance, which we accepted in the absence of any better guidance, and that was the "okaying".

The okaying process was done through the board Infection Control committee. There was input from the board Infection Control committee there, so I think that will be in the minutes later on. So----

Q So, if anyone was to take from this email that you, using your expertise, had looked at specifications and okayed them, that's not the process that this is talking about?

A No, I raised the concern in terms of the mismatch between the existing guidance and the patient change, and got an opinion from the engineers who had designed and-- I don't know, but they were involved in the design of the New South Glasgow Hospital, and it was that advice that was communicated back to the clinical team, not my personal opinion.

Interestingly – I don't know if it's any relevance at this point – the debate around these PPVL rooms has kind of gone on back and forth for a while. The 2024 update of HBN 04-01 Supplement 1 now allows for the use of the PPVL rooms in those patient populations, so immunocompromised patients. That's English guidance – I don't know whether it's been translated into Scottish – which to an extent vindicates the professional view taken by the engineers that the rooms, compared to the TB guidance, were appropriate to use in this circumstance.

Q At the stage of this email, there seems to be quite a lot of questions still flying around, because if we look down the page, given you've mentioned MERS-- Sorry, we're still on page 180. You say, near the end of the long email, MERS is a different issue, where the writer is pointing out the ventilation is critical and raising various questions about filters, and so on and so forth.

A Yes. Again, MERS is a more recently emergent infection, but it's spread in the same way as multidrug-resistant TB, so through the air. So, if a room is specified as appropriate for multidrug-resistant TB, which is kind of

exemplar of infections spread by respiratory route, then in the absence of any guidance specific to MERS, you can actually use the TB guidance and it will work for all respiratory infections.

Q Can we go back to your witness statement so we can see where we are? Page 17, please, and I think, what you're telling us there, it includes the statement which we've unfortunately come across already about the possibility of an immunocompromised individual who is also infectious for one reason or another, and we had some evidence about that the other day.

Then in 65 you're picking up the fact that, originally, one of the ideas was you could have rooms that could be negative pressure or positive pressure, and then it was decided this was not a good idea, because the wrong patient in at the wrong time or with the wrong switch pushed and you had a problem.

Q Absolutely.

Q Therefore, these were no longer in use. So, if we go onto page----

A Sorry, could I just add a point to that----

Q Yes, please.

A There's the possibility of a patient, as you've outlined, with both an infection and immunocompromised at the same time, but in-- and we're not talking about the context of these in bone marrow transplant. We're talking about the context in Intensive Care Units or Renal Dialysis Units. So, if a patient needs to be cared for----

THE CHAIR: Sorry, the context is?

A Of, basically, patients who need treatment in specialist units that you referred to really, either for ventilation and intensive care or renal dialysis in the Renal Unit. It's not possible to provide these facilities in every unit in the hospital, so patients tend to move to those units for that type of treatment.

The advantage, additional advantage, of these rooms, looking hospital-wide, is that they can be used for either infection or immunocompromised, or a combination of the two. So, you don't need to set up two different types of isolation rooms in the Intensive Care Unit areas or in the renal areas. They can be used one day, with appropriate cleaning and disinfection, for an immunocompromised patient, the next day for an ID patient, so it gives you much more flexibility in the use of the rooms.

The guidance also doesn't really recommend, and probably advises against, mixing positive and negative pressure rooms in the same suite because of the complexity of the air flows. So, if you only have one area in an Intensive Care Unit to house patients

from either an infectious disease unit or a Bone Marrow Transplant Unit, these rooms are a solution to that.

So, it's not necessarily they will only be used for patients with both infection and immunocompromised at the same time. They can be used on one day for an immunocompromised patient and, in the same Intensive Care Unit, they can be used for an infectious patient subsequently.

Q Right, thank you.

MR CONNAL: And am I right in thinking that you've highlighted a recent change in the guidance, but at the time these rooms were not recommended for bone marrow transplant patients or highly infectious patients?

A Again, the guidance said that-- it didn't describe guidance for that. It didn't say, "These rooms should not be used for..." If the guidance had been clear and said, "These rooms should not have been used for..." that would have been the end of the conversation, saying, "Well, actually, these rooms can't be used for this purpose."

What we were left with is, if you like, a hiatus in the guidance between the previous HBN, which didn't describe the guidance for this type of room, and the current HBN which does. We were trying to interpret the provision of the rooms to the nearest comparable guidance that we could find.

Q We can probably pick that up on the next page of your statement, which is probably what I was rather badly attempting to quote from, paragraph 68, where you say:

> "The technical guidance (SHTM 03-01) stated at Appendix 2 that the lobbied side rooms are not suitable for bone marrow transplant patients or for use on infectious disease units."

Then your point is, "but they don't go on to say what is."

A Yes, that's absolutely right.

Q At that time, the advice was, "No," but not, "What else."

A The advice, I don't think, was even, "No." I think the advice was the guidance does not describe, so it's not a prohibition. In my reading of it-- I mean, I'm sure that there could be a debate around that, but it wasn't a prohibition. It was an absence of a recommendation.

THE CHAIR: Right. Well, that may answer a question that occurred to me when I was reading your statement, because I couldn't find in Appendix 2 a statement that it was not suitable, but the point you're-- or at least Appendix 2 of SHTM 03-01, but you're not actually saying that there's a statement that it's not suitable, but it's an absence----

A An absence of guidance for those patient populations. So, I can't remember the exact wording, but I'm pretty clear it's, "This guidance does not describe the facilities required for severely immunocompromised or infectious disease unit patients," but I would need to go back to the guidance to check that. Apologies for the lack of clarity. I was just obviously paraphrasing, so----

MR CONNAL: Just looking at what else you say in that paragraph, you say you don't know why the particular lobbied side rooms were chosen. Then you say, "Well, I'm not saying they're unsafe, because there are similar rooms at Great Ormond Street and in Leeds," and these are hospitals that are selected for mention because they have BMT units. Is that right?

A My knowledge of the situations in Great Ormond Street and in Leeds and possibly Birmingham dates back to a conversation that Professor Gibson started with me. I think there should be emails to this effect. She'd been informed by the Project Team that these rooms were to be used in the Schiehallion Unit. She had no experience of them. She emailed me to ask my view about them.

At that time, I was a member of the paediatric microbiology group, which was microbiologists from most of the large

teaching hospitals in the UK. I contacted a number of colleagues to get their views on the utility of these rooms, and it was very clear that they were actually successfully in use at the hospitals mentioned. They have Bone Marrow Transplant Units, and Great Ormond Street deals with very complex patients.

The conversations that I had with the consultant microbiologists there were, "The rooms have been providing us with adequate air quality, and we've had no clinical adverse outcomes with them," but he did highlight the importance of continuing maintenance for these rooms, because the integrity of the room depends entirely on the standard of the sealing of the rooms – sealing as in "seal," not ceiling – and he made the point that if these rooms were in use, there needs to be very rigorous schedules for what we call "plan-prevented maintenance," the PPM that's referred to, but he had no concerns about the safety of rooms in use at great Ormond Street.

Having heard other evidence that's been presented to the Inquiry – in particular, Pamela Joannidis referred to a delegation that went down to Great Ormond Street –that certainly, in my recollection, didn't happen after we uncovered the problem, so I'm assuming that that was part of the specification

process where a team visited Great Ormond Street and developed the ideas about these rooms. At that time, I wasn't aware about the visit to Great Ormond Street so I really wasn't clear why the design team had gone down that route.

Q When you mentioned, in the foot of paragraph 68, that these work effectively as long as they're built and validated to the correct standards, do you know what these standards are?

A The standards are outlined in the document, either the HBN or the HTM. There's detailed validation standards. Again, the argument about these rooms is in the context of the patient population. In the context of the design of the hospital before the decision was made to move the adult Bone Marrow Transplant Units and the ID unit onto that, these rooms were the ones that would have been specified in that guidance. So, they're a well-recognised design used widely across the UK, and there's clear standards for validation and subsequent maintenance for them.

Q There was always going to be a BMT unit in the new hospital, but it was a paediatric one.

A Yes.

Q So that-- and that decision dates way back before----

A Way before.

Q -- the hospital was occupied. Is that right?

A Again, the argument about-- I mean, the concurrent cases of immunocompromised and infectious cases is much more relevant to a paediatric Bone Marrow Transplant Unit, because children, post bone marrow transplant, often have viral infections, and in that case they need to be both detected from the ingress of any airborne spores, but also there needs to be mechanisms in place to protect the rest of the unit from the infections.

The patients having a very low level of immuno-function tend to shed virus at a higher rate than patients without, because you don't have the immune system to dampen the infection down, so they're actually probably even more infectious than children without that level of immunocompromise.

Q Just a small issue in passing. You deal with air sampling, where you say there was a regular process of sampling in Sciehallion unit when it was at York Hill. We had a little bit of evidence about this earlier in the Inquiry. Would you think that's a useful thing to do?

A Yes. I think it's a very useful thing to do. I think the problem with it is there's no nationally agreed standards for the amount of-- There are international recommendations, but nothing prevalent in the UK, so it's important that you

establish a kind of longitudinal picture of the behaviour of the unit in your hospital and, if there's any deviation from that baseline, that suggests there's a problem. So, yes, we were very convinced at Yorkhill that the air sampling was use.

Q Can we move on, please, to start to look at least at the BMT units, both in the adult and in the children's hospital. We come to page 20 of your witness statement, and you see that the first question there is, "Did you provide input for the clinical output specification?" Now, that's for the adult BMT unit.

A Yes.

Q And you say you didn't, and you think that was John Hood, if that-- was involved. You've had a chance to look at the specification that was provided. Is that correct?

A Yes. It was-- It formed the basis of the conversations we were having after the problems were identified in the adult Bone Marrow Transplant Unit, where the first conversation with the contractor was "Had they been supplied with remotely an appropriate specification for the build of that?" The piece in the specification which actually I think makes it suitable is the section that says:

> "These should be provided to the same standard as the Beatson Oncology Centre in the West of Scotland, which was a well-established and well-functioning unit."

So it should have been clear at that point in that specification that that would be the benchmark that would have been acceptable for that unit.

Q Again, trying to look back and find out why things happened the way that they did, am I right in thinking that the clinical output specification, which you think is adequate, doesn't specifically mention an air change rate?

A It doesn't, no.

Q Because, as you probably know, when things had to be done to try and fix the adult BMT unit, one of the issues that was then encountered was that the air handling kit that was in place, for reasons that we've touched on elsewhere, was not capable of producing, for instance, 10 air changes an hour. I suppose that the question is: is it really a suitable guidance to what is to be built if it doesn't tell the contractor what air changes now are to be provided?

A Yeah. I don't think it was meant as a specification. My understanding of the process-- and, as I say, I wasn't involved at that point, but my understanding is that the clinical teams provide a broad specification for how they see that unit being built. So, we are telling you that this is a unit which will

house severely immunocompromised people, will require specialist ventilation. I think all those things, from recollection, are in that document with a final proviso that it should be to a certain standard. This was not a specification document for the Bone Marrow Transplant Unit. The clinical output specifications are translated into building plans and designs at some point in the process. I would imagine specialist engineers with expertise in understanding the clinical output specification and what implications that has to that build. This was in no way ever meant to be a detailed specification or checklist as to how to build a Bone Marrow Transplant Unit. That was my understanding of it as I read it at the time in 2015. I would imagine there was a number of clinical output specification documents for various areas of the hospital specifying the type of patients and the use to which those units would be put.

Q The difference with the BMT Unit was that the BMT decision-- or the decision to move the Beatson BMT Unit into the new hospital was a decision taken during the course of the construction of the new hospital. So, whatever the arrangement was for clinical output specifications for matters originally, this was coming in the midst of building. This is why I was asking about air changes, because we've had other things like redundancy of air handling units, whether you should have a backup one and so on, but just stick to air changes for the moment. If nobody says, "This will need to provide" -- I think the Beatson was probably 10 to 12-- the information I have. No one says that. Is that not a big gap which-- you then have to rely on somebody else to work out?

A I don't know what brief was given in 2009 for the production of that document, so I don't think I can usefully comment on that, but my understanding of it is that this is not design specification. It would have needed to be translated into a practical solution, if you like, to the set of problems raised by the clinical team to solve the accommodation for that group of patients.

Q You understand why I'm asking the question, because, on the face of it, if you knew what-- you knew as a contractor what air handling units you were putting in as the hospital is being built, you might have been able to come back and say, "Sorry, no can do. We can't do 10 or 12" or whatever the figure is you want.

A But there is presumably a whole stage between this outline specification and the detailed plans provided to the builder. So, at some point, somebody is actually drawing up a

set of documents that the contractors can build to, and that is the process, I think, where the outline specification should have been translated, if you like, into air changes to make sure that that unit met whatever guidance was available at the time or, failing that, met the specification which was provided for the Beatson Oncology Unit.

Q Well, I think the information we have suggests that if you went to the Beatson and did some air change measures in the Bone Marrow Transplant Unit, you'd have come up with air changes of-- whether it was 10 or 12, doesn't matter for present purposes. Wwe're just trying to understand how you can get to this remarkable position whereby Bone Marrow Transplant patients move in, take a pretty quick look with assistance from various people, and then have to move right back out again, which must have been highly undesirable.

A Absolutely. I mean, I think the question should probably be posed to the Project Team as to what their process was for translating the clinical output specification into a detailed design specification for the contractors. There was an email, which may or may not be relevant to this, which kicked off my involvement with the ventilation in the new South Glasgow Hospital tower,

where we were informed by the Project Team that the move was going to be made. From recollection, I think the email says that the decision was taken by Jane Grant in 2013, and appropriate amendments were made to the plan at that point.

Q Well, maybe you don't know, but just tell me one way or the other. The indications we've had is that the people in the Beatson BMT Unit were expecting to an equivalent to what they had, subject to room layout and so on, when they moved.

A Absolutely, and I think that was the expectation of all of the clinical teams, including the Infection Control team, that it was a brand new hospital that we would be moving to a place that was better than the ones we'd left.

Q Okay. Yes. As good as or better is what you would expect?

A That would be the-- I mean, it seems pointless to spend £875 million or whatever on a new hospital and it not be better than the one that you vacated.

Q Thank you. When you're dealing with this in your statement in paragraph 79-- we've kind of gone back a little bit to page 21. We've gone back a little bit to the general question about input from Infection Disease doctors into the overall process, which we dealt with earlier. Can I just ask you, while we're

here, to look at Bundle 14, volume 1, page 25, please? That's, sort of, taking us back to series of emails about ventilation. If we just look at 26-- no, we can forget 26. 27. This seems to be you, in 2012, sending information about guidance on water. Is that right?

A Yes. That's, I think, subsequent to the meeting that you mentioned earlier on the-- I think it was the 17th, so it was the day before. There was a question of what was discussed at the meeting. Those are not specifications for a water system. They're specifications for the quality of the water that should be provided by the water system, and I can only presume, from the timing of the emails, that the main matter subject to discussion at the meeting the day before would have been around the Renal Unit and the water quality, which was-- hence my response in those very specific terms.

Q And the Renal Unit has special requirements for water because of the nature of dialysis. Is that correct?

A Yes. Absolutely.

Q We just look at 28. So, we finish at 29. Let's finish now. Forget that as well. 30. Now, here we seem to be dealing with isolation rooms. Here's an email from Jackie Stewart to Sandra McNamee:

> "Isolation rooms. I'm a bit confused as this design was accepted... and Craig has been asked on numerous occasions to check issues that crop up. Specifically, asked Craig what he wanted to go into detail, as well as the overall approach to ventilation and water supply. I'll double check the ventilation in lobbies. "

So,is this not further indication that you have been engaging in various exchanges about ventilation during the process of getting the hospital up and running?

A As I said, these are the only two occasions with these emails that I can remember, or be reminded of, that I engaged with the ventilation and, again, it was specific issues. There's no discussions about the specification of the rooms or how they would be built, air changes, anything like that.

Q Okay. Well, let's go back to your witness statement, then, at paragraph 80 on page 21. I suppose that the first question I have to ask you in relation to your first sentence is why? You're the lead Infection Control doctor. You had no input into the designs or specifications for the BMT in the children's wing.

A No. The first I was made aware of the specialist ventilation in that

area was when Dr Gibson contacted me, as I described earlier, to say that she'd been made aware that these rooms were being provided for the unit, what were my views, and could I find any information about them. That's when I contacted my colleagues, as I mentioned earlier, at Great Ormond Street in-- I think in Leeds to get further details on them.

Q So, with benefit of hindsight, it would be better if you knew about this beforehand-- had a discussion rather than finding out afterwards and having to go and find out how they work?

A Yes, it would have been better to have the conversation beforehand but, again, I would have referred back to the guidance, but given the dubiety in the guidance, I would have probably followed the same process that I did for the adult ID Unit, where I sought specialist advice about these things, which is what I did at that time.

Q Yes. What we find in paragraph 81 is actually some of the narrative that you gave us in answer to an earlier question about having conversations with other hospitals about this, but I suppose that the question I have for you is this. You're trying to find out if they work and, in a general sense, the answer is, yes, they do work. Is that correct?

A Yes, that's right.

Q But in the middle of paragraph 81, you say that:

> "The advice you got was that they were working effectively but [there's a but] they required a high level of ongoing monitoring and maintenance because they tended to leak."

So there's a qualification to the approval of these items. Is that correct?

A That's in subsequent use. So, the rooms were built initially to the guidance, but I can't even recall the time period. I think John said something like-- about 18 months or two years after the build, they started to detect problems with the routine air sampling being slightly above the normal measures, and when they started to look in, then they found the cause was the small leaks in the ceiling in the seams. So, it's a qualification in terms of long-term use and maintenance, rather than suitability in the first instance.

Q Well, that's what I was going to ask you because if you're trying to reassure a clinician as to the suitability of the item, do you not need to add to your assurance-- the qualification that, as you put it here, a high level of ongoing monitoring and maintenance is required, or further in your statement, a lot of particle counting and pressure testing

when you began to use the rooms? And did you pass these qualifications on to Dr Gibson?

A As I say, I can't recall what my reply to Dr Gibson was, but I may have done, I may not have done, but I would have ensured that the maintenance and the monitoring of the rooms would have been to an appropriate standard to pre-empt any problems when they were in use in the Schiehallion unit.

Q So what did you do about it? Because your statement-- and I accept that this is a recollection. Your statement simply says you:

> "Emailed Brenda Gibson to advise her that the rooms were being used... and with appropriate monitoring and maintenance were effective."

Which at least in these terms doesn't alert her to the fact that you need high level of maintenance and lots of pressure checks and so on. So, what did you do to reflect the qualifications that had been given to you to the approval by your colleagues?

A I would have, at a later stage when the rooms were handed over, ensured that as part of the HAI-SCRIBE bundle, one of the part fours is that the Estates team meet and describe maintenance. I would have input into the maintenance at that point, but that became irrelevant because the rooms were never actually built to a specification that delivered the outcome.

Q I'm just trying to follow the logic of this because this is the paediatric BMT unit which is a unit that's always going to be there.

A Yes.

Q So did you make special arrangements for monitoring and maintenance?

A There were no arrangements for monitoring and maintenance at that point because we were talking then about specification and the unit didn't exist at that point. So, this was early in-- it was in the planning stage when there was enough information made available to say what type of the rooms were, but the rooms were not handed over to us.

I would have, as I say, made sure at the time of-- when we took up the responsibility for the air sampling that these rooms were air sampled probably more frequently than we did at Yorkhill and ensured that the appropriate level of maintenance was built into the Estates documents PPM. But at that stage we weren't talking about real rooms. We were talking about rooms on a design, and were there any major problems with that design, rather than actually the reality of the rooms.

Q Now, you said in answer to an earlier question – and I just want to make sure I've got it correctly – that in fact, as it turned out, they weren't built to that design anyway.

Q They weren't built to that-- they didn't deliver the specification that that design should have delivered. I couldn't say for certain whether they were built to that specification.

Q Right, but whatever the design was that you'd gone to enquire about, that wasn't what was built?

A I think there is some questions around that in some of the emails that I've seen. I think there are some emails from David Louden that I've seen in the Inquiry bundles where Currie and Brown say that the rooms were built to those designs. The design of these rooms wasn't in debate, so the PPVL rooms were well-described in the documentation for use in hospitals. They weren't designed, they weren't specified for use in this patient population. So, the design was clearly outlined in the SHTMs, and I can't remember where the details-- but I'm sure there are statements in the emails that these were built to that design.

Q Well, yes, I think you're right. I think there are certainly claims that they were built to that design, but I thought you'd said that they were not built.

A No, I'm sorry. I must have been slightly inaccurate. What I meant is that these rooms didn't deliver the outcomes that we would have expected to rooms of that design to be built to.

Q Right.

A So we would have expected rooms of that design to provide clean, HEPA-filtered air to the patients in the room, but that clean, HEPA-filtered air wasn't being provided when we got to the reality of looking at these rooms.

Q Right.

A So it's a question of how the design was implemented, I think, rather than the actual design but, again, I'm not an expert in design, so----

Q Yes. Very well. Let's move forward. In the following section, you're dealing with the fact that there were two units moved into the new hospital that weren't originally scheduled to be there. One is the BMTC unit from the Beatson that we've touched on, and the other was we've been talking about the Brownlee Infectious Diseases Unit and you've been asked in your witness statement about any concerns. I think you say on page 23 at the top that the decisions weren't yours, but you were asked to provide views on that as a team. Is that right?

A Yes, that's right.

Q And the one you were more bothered about was the ID unit, because you were – going to paraphrase what

you've said here – moving from a standalone unit with its own entrances and so on and so forth to, as you describe it, "Putting an Infectious Diseases Unit in the centre of a tower block in a large hospital."

A Yes.

Q Which raises, presumably, entrance and exit routes as questions, including refuse. Is that right?

A Yes, absolutely. Yes, that's the concern. So the patient-- once the patient's in the isolation room, then that's a controlled environment. So you can prevent the spread of infection, but the patient has to get to that room. Patients appear in ED or in a variety of ways. They don't basically materialise in the controlled room environment, but there's also then the problem of highly infectious waste, which there is a number of well-documented procedures for dealing with, but you still-- it increases the risk by having to move that infectious waste from the patient's room to a disposal point. So we were initially concerned about those.

Plus the total number of the lobbied side rooms that we'd mentioned earlier on. So increasing the ID unit may potentially increase the number of patients needing isolation. Therefore, were there sufficient rooms provided for that purpose? They were our concerns at that point. I don't know if it's appropriate

that we go into how we address the location of the bone marrow-- the ID unit concerns now, or whether you want to----

Q Well, I was going to ask you about the ventilation requirements. In 88, you're talking about-- you're getting difficulties in getting the patient into and out of the unit and providing appropriate ventilation. So, what standards were you looking to provide for the infectious diseases patients?

A So, this comes back to the wording in the building note that Infectious Diseases Units were not described in this specification. So, we'd been provided with rooms that were specified to the original SHTM 03-01, but the guidance had said that these rooms were not-- that the guidance didn't describe these.

So the question at hand was, "Can these rooms be used for the isolation of patients with transmissible respiratory infections?" and the best guidance available around that was relating to multi-drug resistant TB. So, we weren't talking about only patients with multidrug resistant TB, we're using the MDR TB as an exemplar infection to say that if the rooms are safe to prevent this very serious respiratory infection spreading, they'll also be for other respiratory infections, and that was the question that we posed to the design team as to, was

the specification that they delivered to the new hospital equivalent in terms of air flows and protection to the infectious diseases the MDR TB guidance, which was published by the Department of Health sometime previously.

Q And what was the answer?

A Yes.

Q Because the other way doing it, presumably, would be to find out what provision was made at the Brownlee Unit and to duplicate that in a new hospital?

A Yes, it would have been, but by this stage the new hospital was built. So if there's been any dubiety about the safety of these rooms raised by the engineers, the Infection Control Team would have fed back and said, "It's not suitable to move these patients." The question we were trying to answer is, "Is it safe to move the patients into the hospital as it stands?"

Q I think that the question as to whether negative pressure rooms which had been provided in the Brownlee were provided in the new hospital, and the answer was “no”?

A No, because, as I say, the specification didn't originally ask for an Infectious Diseases Unit. We were trying to ascertain whether the rooms that were present in the new hospital were suitable, if you like, for the Infectious Diseases patients. Again, to paraphrase the opinion of the expert engineers was "They provide the protection," and as I've said, the rooms are now specified in the new SHPN are suitable for that.

Q And I think you make the point in 89 that you had to think, not only about the unit itself, wherever it was going to be based, but also about the possibility of Intensive Care protection. Is that right?

A Yes, and that's for the same reasons as discussed previously, that patients don't entirely spend their stay in the hospital necessarily on the unit that they're admitted to. So, for example, a patient with MERS or respiratory infection may require ventilation. That ventilation can't be done on the Infectious Diseases Unit because of a lack of anaesthetic expertise or lack of facilities. So at that point the patient would need to be transferred for intensive care to that unit. So there need to be rooms available in that area that meet the protective specifications for those patients.

And I think that was one of major drivers of the Infectious Disease physicians, although you'd need to cross-check with them, they actually wanted to have proximity to both the diagnostic facilities and the Intensive Care facilities that were present on the new site, which weren't present to that extent on the Gartnavel site, so that was a major clinical driver for them in wanting to move

to the hospital.

Q Thank you. Now, we're coming back to validation again, in the way that sometimes happens. We've touched on a lot of this earlier. I suppose I just really have one question I want to come back on, and if I've asked you about it already then please bear with me. I suppose I'm just trying to get to the point of saying, well, you say here the infection control senior management team repeatedly requested information from the Project Team about the validation report, and the specialist units and operating thesis were continually assured all areas are being built and validated to the relevant standards, but no documentation was provided. Now, you then say, "We were never told it hadn't been performed." First of all, do you remember who actually provided these assurances?

A Again, there is an email in the bundle, I think, from one of the Project Team to, I think it was Jackie Stewart, the infection control nurse who was leading the project, saying that all the hospital had been built and was compliant with the appropriate legislation.

Q Because on the information the Inquiry has at the moment, no validation was done.

A Well, I have to say I'm not surprised about that, having seen the rooms in the state that they were in when we took them. There's also-- immediately after the project-- sorry, the project. The problems we discovered at the adult Bone Marrow Transplant Unit, there was an email to myself and a number of others from Ian Powrie, who was one of the estate's officers on the Southern General site, saying that Brookfield had not performed, I think it was the HEPA filter particle testing and pressure differential testing to those rooms which, again, would have been an integral part of the validation. So I mean, it would-- in my opinion, that would suggest that that the validation was never done.

Q Yes.

THE CHAIR: I mean, you use the expression, "We were continually assured…" Now that suggests to me – I may be wrong about this – that you were making repeated requests, and you say the request would be directed to Jackie Stewart. Is that how I am to understand this paragraph?

A Repeated is over the period of time from when we started----

Q Sorry?

A The repeat-- The repeatedly was over a period of time. So we were repeatedly, over several months through various different fora, asking for information on this----

Q Right.

A -- which had culminated with us requesting a member the Project Team to attend one of the Acute Infection Control committee meetings and specifically answer whether the validation and things were proceeding. I can't remember the exact date of that meeting but there should be minutes available of that meeting.

Q Right, so I'm right to interpret that as a reference to repeated requests?

A Yes.

Q So requests were not being met and you were not surprised, looking at the hospital, that there had been no validation?

A When we got to the point where we started to look at the clinical units in detail----

Q Sorry, you'd started to?

A If I use my own example, because that's probably the best-- So when I-- When the Schiehallion unit was in a state that it started to look like a proper hospital which was towards the end of 2015, Clare Mitchell and I went to walk around the unit to make sure that everything was in place and everything was okay. I was surprised at that point to see a workman in one of the isolation rooms still fixing things to the walls because the whole premise of those positive pressure ventilated lobbies is that the patient room needs to be sealed, so

to direct the flow appropriately from the HEPA filter to the patient.

Anything that potentially affects the integrity of that wall would basically make the rooms functionally less useful. So when I walked onto the unit, the first thing that I noticed in the anteroom, there's vents similar to the ones in the ceiling here. You could actually see the silver ducting on the other side of the vent, whereas the flexible tubing on the other side of the vent linked to the air system. There should have been a HEPA filter in place there because that's where the air should be HEPA filtered, and then when I went further on into the room, it was clear that in the bathroom what they call the IPS panels, which are the pieces of Formica that seal the pipes in, hadn't been sealed down the side with silicon, as you'd expect.

So at that point I wasn't entirely sure. I knew it wasn't right. I just wasn't sure of the extent of the problem, so I immediately contacted John Hood, who had expertise in buildings, and Ian Powrie, and we spent some time in the room just having a look around and finding out exactly what the problems were, and it seemed the consensus was that there was no HEPA filter. These rooms weren't sealed. I think John noticed. I think he may or may not have at that point brought his smoke machine,

which actually gives you a visual indication of the direction that the air is flowing in.

At that point I wasn't that clear on the validation in detail, but it seemed to me to be pretty unlikely that that room could have passed validation, given the fact that the air flows wouldn't have been appropriate because the room wasn't sealed and because there was no provision of HEPA-filtered air to that room, and the integrity of the HEPA filter test is integral, again, to the validation of those rooms.

Q And this was in May 2015. Remind me when-- Patients were not in the ward?

A Patients were not in the Schiehallion ward at that point.

Q When did patients move into the Schiehallion?

A I think it was two or three weeks later. Two or three weeks later is my recollection, but I can't remember the exact date.

Q Two or three weeks later.

A So, after finding the somewhat surprising finding that the rooms didn't seem to have been built properly, I emailed Tom Walsh, the Infection Control manager, and I don't know whether it was the same day, or if not, it was very soon the next day. The clinical teams were made aware of the problem. Grant Archibald, the chief operating officer, and David Loudon met with myself and Tom Walsh where we outlined what we'd found, along with the advice I'd had from Ian Powrie and John Hood about the rooms. There was then a meeting convened with myself, Tom Walsh, I think Brenda Gibson was there, Grant Archibald. I can't recall if John Hood was there, but he may well have been, and other senior managers to discuss the potential for the safety of moving patients into this unit.

The consensus of the meeting was that, in clinical terms-- and I think it was Dr Gibson that agreed to this. She felt there was more risk leaving the patients behind in a standalone unit at Yorkhill than moving the patients to the Bone Marrow Transplant Unit, but she had actually built a pause into the transplant programme to take account of the fact that there was probably likely to be some disruption during the move, so there was no immediate transplant patients booked in at that time. But, again, there should be minutes or notes of those meetings, and there will certainly be notes of the email correspondence that Tom Walsh and I had with Grant Archibald, the clinical teams and David Loudon around that time.

The other thing-- At the meeting with Grant Archibald and David Loudon I

specifically asked-- because the implication of finding the problems in these rooms in the Schiehallion unit was that the rooms of the same specification were built all over the rest of the tower block in the adult unit and in the paediatric Intensive Care Unit. So I think it was Annemarie----

Q Sorry, just give me that again. The implication of what you'd found in the Schiehallion unit was----

A That possibly all of the rooms built to that design across the rest of the hospital site may have not been built appropriately. That includes the rooms in the paediatric build in the Intensive Care Unit, but also the rooms in the adult build in the Renal Unit, the Intensive Care Unit, and there was some in the High Dependency Unit, from recollection. So it was a problem that potentially reached beyond the children's hospital to all of the rooms in the site.

Q And would the answer to that, Professor Williams, have been to say that the information you'd been getting from the Project Team was clearly untrue; that validation had not happened because it couldn't have happened; and no patients were moving in anywhere until validation was carried out properly and evidenced?

A Again, at that time of the meeting, we held the view that the risk to the paediatric patients was greater if we

didn't move them than if we did move them.

Q Sorry, give me that again.

A Yes, the meeting that we held to discuss specifically the move of the paediatric patients into the Schiehallion unit was that the risk was felt to be greater leaving the Schiehallion unit alone at the Yorkhill site than the move of the patients to the new unit.

Q That might be described as making the best of a very bad job.

A It might, but I think the view was that these patients need a lot of additional input from specialties outside haematology. They would be dislocated, then, from that support, and the balance of risk was that they should be moved to the new building. Again, that wasn't a decision that I took; that was a decision taken at the meeting with Grant Archibald and clinical members of the haematology team.

Q I perhaps didn't give you the opportunity to respond to Mr Connal's question, which I think was to the effect that, at least on the basis of that visit to the Schiehallion unit, you must have appreciated that what you'd been told repeatedly by the Project Team was just not true.

A Yes, it would have made it difficult for me to believe that the validation had been done, but at the

meeting that I had with David Loudon and Grant Archibald to discuss this, I specifically asked David Loudon if he was aware of any problems with the adult Bone Marrow Transplant Unit, because obviously I drew the same conclusion that there may have been risks across the rest of the site. I was told in absolute terms that he was not aware of any concerns with the adult Bone Marrow Transplant Unit. So the problems with the rooms were limited to the special isolation rooms in the paediatric and the adult hospital, not to the adult Bone Marrow Transplant Unit at that point, as far as I was aware.

Q And that wasn't correct either?

A That wasn't correct either, no.

Q I am just wondering whether the answer to that might have been, "Well, I'll take that at face value, David, but can you show me the validation document for the adult BMT unit?"

A It could have been, but if you ask a senior colleague a specific question, then you have to respect their expertise, and if they give you a straightforward answer, then you have to accept that answer.

Q The way you described what David Loudon said to you was that he was not aware. Is that the wording he used? I appreciate it was some time ago.

A I can't remember the exact

words. When I raised the possibility that there may be problems in the adult Bone Marrow Transplant Unit, he replied to the negative. I can't remember the exact form of words that he used.

MR CONNAL: We're jumping around a little in terms of time and dates, but if we can just look briefly at the document referred to on page 24, which is bundle 27, volume 3, page 161. This is slightly out of the order of the narrative you've helpfully given us in answer to his Lordship's questions because the bit that you've dealt with there is a little later in your witness statement. We'll come back to that. But what we have here is you, I think, outlining problems with the BMT unit. Now, that's the adult BMT unit.

A That's the adult BMT unit, yes. So that document is after the problems of the adult BMT unit were identified by the implementation of our routine sampling in that unit.

Q Can we just look on to the next page, please? Essentially, what we then have there is a narrative description of what you saw the issues being, starting at the top by saying, "The outputs clearly specify the patient group was vulnerable to infection and therefore required the protection of a protected environment," and then there's a list of requirements and so on which goes through this in some detail, and I think subsequently

John Hood annotated that by adding his thoughts on it as well. Is that right?

A He did, but that original specification dates back to that original 2009 clinical output specification that we discussed earlier, so the items in that were taken from the original output specification. That was the only document that had any details of what was originally asked for in the adult Bone Marrow Transplant Unit.

THE CHAIR: I think you explained this to Mr Connal, but can I just confirm? The document headed "Original Specification" was drafted by you with some input from Dr Hood, was it not?

A The original document was drafted in 2009----

Q I can see the clinical output specification was drafted in 2009, but what we're looking at, at page 162, is that your summary?

A That's my summary of the clinical output specification.

Q With input from Dr Hood?

A There was no additional input from Dr Hood at that point (inaudible) basically taken from the original document. So at the bottom of the original clinical output specification, it said, "Advice for the specification was sought from Dr John Hood."

Q Thank you.

MR CONNAL: I think we can probably follow it through. If we go to 163, there's a list, "Current deficiencies identified." Two rooms not HEPA filtered. There's a question about the rooms not being sealed, movement of ceiling tiles. "Air exchange is required to be over 12." That's probably why I mentioned that in the context of earlier questions. "(Inaudible) not yet achieved." "Sealed room? Validation for leak testing," and then there's a comment about the particle counts in the pentamidine room, which has got a different issue, which we needn't take your time on. Essentially, it comes to a conclusion at the bottom which essentially means people are going to have to go back to the Beatson.

A Yes.

Q And just so we can pick up what Dr Hood does, if we go to 164-- Something appeared on my screen there and then disappeared again. Would it be 165? There we are. Thank you. And what we have is the same document into which Dr Hood has interlined in red certain comments on various things. Is that right?

A Yes, that's right. I think this is a part of a-- It's a partial email trail. So I think this comes from an email I sent around when I returned from leave to get the thoughts from all the Infection Control doctors and other interested stakeholders on the document that I was about to send

to Jennifer Armstrong, and the reason for the document was not in any way an attempt to define a new standard for the adult Bone Marrow Transplant Unit. The reason for the document was to establish for a meeting with a contractor – I think it was later on that day or the next day – that in our view we had provided a clinical output specification to them which clearly outlined the fact that this would be for immunocompromised patients and that it should have been built to a similar standard for the West of Scotland. This wasn't an attempt to produce a detailed specification, which would have been utterly unreasonable in that time. It was really to start the process of discussion with the contractor as to how best we could start to rectify the situation. I don't know whether there was any concerns about who was responsible or accountabilities and things like that, but I was asked specifically to provide a document relating to the clinical output specification; the passage through time, as far as I was aware, in terms of who'd assured people this was going on okay; and the deficiencies that have been identified at that time.

Q Because Dr Hood has this information, it's he who chips in near the bottom of that page, a reference to the assistance of somebody called Andy Streifel, a world expert in air quality, at the time that the Beatson air arrangements were fixed. Is that right?

A Yes, and John Hood probably had the most expertise in Glasgow in terms of the built environment. Andy Streifel, I think, was a kind of world-recognised authority on this, so he had, I think, direct dealings with Andy Streifel at the time of the development of the West Scotland Cancer Centre.

Q Okay, thank you. We can leave that document now. I just want to return briefly to your witness statement to just get another couple of things out of the way. In paragraph 98, you've been asked to look at a set of minutes from 2014, but it's just because of my earlier questions about who the Project Team was, because obviously the Project Team is a bunch of individuals, and in your witness statement, you say that you had reported at this meeting that you still hadn't heard from Fiona McCluskey, so she must have been in the Project Team. Is that right?

A That's right, yes. This, again, relates to the timeline we discussed earlier where we were informed in August 2014 that there was to be a change in patients coming to the hospital. At that point, that was when I asked for advice from the Project Team to compare the standards of the rooms that had been provided with the MDR-TB regulations,

and I sent that email to Fiona McCluskey. I think, from recollection, that would have been late August/early September. As of 1 December, I had not received a reply.

So, the escalation process is what we would normally do. If we'd discussed it at the SMT, the action was that we'd try and resolve the problem by seeking expert advice from engineers. We hadn't actually had a reply back at that point and, basically, we needed a reply to that specific query, and I escalated it at the Board Infection Control Committee at that point.

MR CONNAL: Yes, and, in fact, you record that paragraph, perhaps more significantly on one view, that someone from the Project Team was effectively told to come to the AICC meetings to tell you face-to-face what the position was, and you were reassured again at a meeting that units were validated.

A Yes, that's the AICC meeting that I referred to. I haven't seen the minutes of that meeting. I'm not aware of it being in the bundle, but that's my recollection. I'm sure it was an AICC meeting, rather than a BICC meeting.

Q You record in 99 that Dr Armstrong had stated that the issues over MDR-TB patients and bone marrow transplant patients should be resolved prior to the opening of the new hospital, and you note:

> "However to do this we needed to be provided with the validation certificates..."

So you were aware of that need in advance of the hospital opening.

A Yes, we were. I mean, this doesn't relate to the bone marrow transplant patients as such. This relates to the positive pressure lobbied ventilation rooms outside the Bone Marrow Transplant Unit. So, again, the concern was that the patients were appropriately protected outside the Bone Marrow Transplant Unit.

THE CHAIR: Sorry, can I just make sure that I'm following. Paragraph 98. There's a reference to the board Infection Control committee meeting on 1 December 2014, and there you say, "I commented..." So, you were present at that meeting?

A Yes, I was, yes.

Q You said you still hadn't heard from Fiona McCluskey, and, from my recollection, one of the Project Team, I think it may have been Fiona, was asked to come to one of the AI-- that's the Acute Infection Control committee----

A Yes.

Q -- meetings. Now, is that a meeting that has happened before the board meeting on 1 December, or----

A I can't remember, sorry.

Q And "We were reassured"----

A But, again, I'm----

Q -- and when you say, "We were reassured," what----

A -- not at that meeting, so I can only assume from the minute that the AICC meeting had happened prior to that board meeting.

Q So, you were reassured at the board meeting?

A At the AICC.

Q Sorry, at the?

A At the AICC.

Q At the AICC meeting.

A Yes.

Q You can't say whether that was before or after the board meeting?

A I think, looking at the minute, it sounds as though it was before because, again, it says, "We were reassured again," so I can only assume that the AICC had happened before.

Q Did you challenge that reassurance?

A I think we'd asked the Project Team member to come specifically to provide an update of what was going in with the hospital, the validation and things like that. They came to the meeting and, again, restated that all the building was being done to the HTM 03-01 standards. If that was the case, then there should have been no concerns.

Q It's just that your experience that year and----

A That was prior----

Q Well, wait a minute, we're----

A That was prior to any----

Q -- now in nearly December 2014.

A That was prior to any problems being discovered.

Q Right, thank you.

MR CONNAL: My Lord, I just noticed that the time----

THE CHAIR: Yes, We usually take an hour for lunch. Could I ask you to be back for two o'clock? Two o 'clock, yes?

(Short break)

THE CHAIR: Good afternoon, Professor Williams. Now, Mr Connal.

MR CONNAL: Thank you, my Lord. (To the witness) If we can return to the witness statement as a guide to where we've got to at 27, please. I only have one question about this section. You've been asked about HFS building notes and guidance, and you say you need to risk assess. Were you involved in risk assessing, from an inspection control perspective, any parts of the new build Queen Elizabeth Hospital?

A Not in the design process. I was obviously involved in risk assessing patient placement after we discovered the problems and making sure that people went to the best place, but not in terms of

the design.

Q So, not before patient occupation?

A No.

Q In the next section of your witness statement, you deal with a matter you've already touched upon, I think, in answer to a question by His Lordship on obtaining assurances from members of the design team on various matters. Then if we go to 29, here we're talking about, I think, again, something that you picked up in the course of answering another question earlier, and that was your experience of turning up and having a look at the pediatric bone marrow area. Now, just as a matter of detail, would I be right in thinking that it was probably 2A rather than 2B because 2B was the daycare ward?

A I knew it was Schiehallion, sorry, because it was referred to that at Yorkhill. It was the area of the Bone Marrow Transplant Unit with the specialised ventilation unit.

THE CHAIR: Sorry, Professor Williams, I think you're allowing your voice to drop just a little.

A I apologise, my Lord. I'll try----

Q If I could encourage you to speak maybe a little louder than normal conversation.

A Yeah, I was referring to the part of the Schiehallion Unit where there was the specialised ventilation. I can't remember if that was 2A or 2B, sorry.

MR CONNAL: Thank you. We've already touched on this, but I just want to get the phraseology you use in your witness statement correct. At the foot of page 29, you're talking about a meeting attended, among others, by Mr Archibald and Mr Louden to discuss issues, and you say in your statement:

> "As I had seen deficiencies in the paediatric Bone Marrow Transplant Unit, I specifically asked David Louden if there were likely to be any problems in the adult Bone Marrow Transplant Unit."

Now, you were asked by His Lordship if you remember the exact words. What you've put here is, "He reassured me that everything was okay in the adult unit." Can you remember any better than that now?

A I doubt-- That was my, kind of, take on the communication rather than a verbatim quote of what Mr Louden said to me. I remember the context of asking the question because Grant Archibald made a comment that I wasn't afraid about asking the difficult question. So I definitely remember the conversation, but I can't remember David Louden's reply, sorry.

Q It sounds as if you asked a

difficult question and got-- I was about to say palmed off, but you didn't get a very detailed reply. You were just told everything's fine.

A Yes.

Q Then, on page 30 of your statement, you make the point that you're looking at other PPVL rooms outside of the Schiehallion Unit. There's a debate, which I think you probably touched on earlier, mentioned in paragraph 111, about not transferring patients from the existing Schiehallion Unit in Yorkhill to the new Schiehallion Unit in there. Do you know if there's any minutes or anything about that because it does sound as if there was a risk, at least, of bringing patients into a part of the new hospital that wasn't fully safe for them?

A Yes, I would imagine there would be minutes or notes of a meeting or emails-- trails around the meeting, but I've not seen any in the bundle, as I say. I've not had access to my emails since I left GGC.

Q But it would be correct to say that one of the factors in that discussion was that investigation of the Schiehallion Unit in the new hospital suggested there were at least some difficulties with its patient safety?

A Yes, absolutely. Patient safety can, to an extent, be mitigated in terms of prophylaxis but, again, you would want

the prophylaxis and the ventilation, ideally.

Q Because then you're giving the patients extra medication, to use a layman's terms, above what they require for their illness in order to cope with the fact that there's inadequate building of it.

A No. Prophylaxis is a fairly standard procedure in routine bone marrow transplantation. It improves patient outcomes. So, all the patients would have prophylaxis for that procedure anyway. Again, I'm not an expert. That's my recollection, but I think giving more active prophylaxis for our bone marrow transplant patients and high-risk patients was well-established by that point.

Q In 112, you cover something you touched on earlier, and you suggest that, I think, there was a spell built in to the proposed move where there was going to be no bone marrow transplants. Now, I have at least some information suggesting that's not right and that bone marrow transplants were taking place as early as July of 2015. Can you remember----

A I can't remember that. I remember there was still discussion about patients being transplanted in some minutes that I saw in the bundle much later in the process, but my recollection is that there was a pause at

that point in the bone marrow transplants.

Q You mentioned in paragraph 112 some testing to be done by John Hood. Was that not a little later in the process?

Q No, that was very early on in the process. So, as I said earlier on, I made the, kind of, initial observation that there was no HEPA filters fitted to my eye. The ceiling in the room didn't seem adequate. I contacted John Hood, who kindly-- I think he agreed to come across later that day or the next day, along with Ian Powrie, and look at these rooms in more detail to find out whether he agreed with my views. So, this would be end of May, early June.

Q Could we have a look at bundle 14, please? Volume 1, 261. Now, we'll need to scroll down past 261 itself just to see what this is about but this seems to be you telling Brenda Gibson, I think, that:

> "The unit should be safe to use from the day you move in. We will air sample one week before as a final check."

Because, at the bottom of that page, you see Dr Gibson saying: "When will we be able to restart transplanting?" So, you come back and say, "Well, anytime from day one."

A Yes because that was my understanding at that point because the email was sent prior to us being aware of the problems on the Schiehallion Unit, which was later in May than that. So, that was a general inquiry from Brenda Gibson about when she could theoretically stop the pause in the treatment. That didn't relate to the knowledge that we had after we moved into the Bone Marrow Transplant Unit, which-- from recollection, I think it was 28 or 29 May when we found the problems. Maybe the 27th, sometime towards the end. Certainly, at that point, I wasn't anticipating any major problems with the Bone Marrow Transplant Unit. The air sampling was the reinstitution of our routine air sampling from Yorkhill, as we discussed earlier, not air sampling specifically to detect problems identified in the Bone Marrow Transplant Unit.

Q Can we just look at 270 in the same bundle, please? Here, we are in July, suggesting a meeting to discuss progress. If we just scroll down to 271, again, discussions about progress. 272, discussions about particle counts. So, things were being done well into July to try and deal with the issues. Is that right?

A So, I think they would've being even longer than that. I mean, my recollection is it probably lasted longer than July. There are minutes available for meetings where it was in discussion. I

think that might be as late as August and September. The problem with the transplants became more pressing the more time went on.

Q Do you remember whether any investigation was done at that time as to what the air change rates were in the Schiehallion Unit?

A There would have been-- So, what we undertook was a process of, firstly, putting the rooms to what we thought was the correct specification. So, the contracts came in, fitted the HEPA filters to the rooms, resealed the rooms, and then they were subject to pressure testing and revalidation. There would have been exchange rates at that point.

Q Because we know from material that arose well after you had gone that-- even in 2018, it was being discovered that the air change rates in the Schiehallion ward were not what was recommended for immunocompromised patients.

A The process at this time – I can't comment on later – was that it needed to be a kind of-- what they call the three director sign off for the decision to proceed with these rooms. So, clinical team led by Professor Gibson, the Infection Control team, and the Estates, and the criteria were that the room specification, as outlined and the air sampling was acceptable to both the

Infection Control and the clinical teams. I can't remember the exact details, but we wouldn't have proceeded with bone marrow transplants until we're happy that the rooms were functioning to the appropriate specification.

Q This is really the question I have, that, as I say, we know from other evidence to the Inquiry that as late as 2018 specialists are saying, "These rooms are not providing the 10 air changes an hour that were recommended for that patient cohort or, indeed, the pressure gradients that were (inaudible)." So how did you become satisfied that they could proceed in 2015?

A By employing commissioned engineers and specialists in the areas in a similar way to the document we looked at earlier, where all the parameters are measured and assessed, and then a verdict given. So there would be documentation around the Schiehallion rooms from that time.

Q Thank you. I may be jumping around a little bit within your witness statement because, to some extent, we've covered in earlier questions matters that are dealt with later. Can I go to 31 in your witness statement, please? In paragraph 114 on page 31, you're dealing with a dust problem because there were demolition works going on. So, this is in the early part of patient

move in in 2015. Is that correct?

A That's correct, yes.

Q And you were concerned about that, and does the production of dust also sometimes bring fungal issues as well?

A Quite often, especially if there's organic material in the dust, so from old flooring or rafters, roof spaces, things like that. The concern was that the patients couldn't be moved out of the old blocks until the new block was built. So it would have been impossible to demolish the old blocks before the hospital opened. The old blocks were downwind from the new hospital, and fungal spores spread through the air in the direction of the prevailing wind, so the air inlets on the new hospital would have been basically in the line of the dust.

There's a variety of filtration stages which basically takes the air from big particles and dust right the way down to microscopic particles with HEPA filters, so we asked the Estates people to make sure that the filters at the front end of the system which would have trapped the large dust particles had been recently replaced and were fit for the demolition.

Q And do you know whether they had to check the filters physically or did they just go on maintenance records?

A I don't know.

Q And was there a report back from Estates on this check?

A I remember there being a report saying, somewhere in email, there was-- they'd been checked and were working optimally, but this was, again, a precautionary measure in addition to the extra layers of filtration further down the system to make sure the filters didn't clog behind the initial filters.

Q Thank you. So, I think in the next couple of paragraphs you're commenting on the meeting that, in fact, you weren't at, but it raises similar questions about getting assurance from the Project Team which wasn't being provided, and then we move on to a topic that we have already touched on to some extent, which is the Ward 4B saga. You say you were on leave initially and then you came back and it turned out that there are some difficulties there. There's a discussion there about air sampling showing problems. Should that not have been done before there were patients there?

A It's a difficult balance to achieve. We talked earlier on about the hospital looking like a building site after it was handed over to the GDC. Air sampling in that context would be less useful because it's not the conditions that would be present when the patients are in the ward. It's a judgment, and the judgment would be taken by the Infection

Control doctor for that area as to when the balance between kind of readiness of the ward was there to allow meaningful air sampling to take place. So I can't comment on why that decision was taken but I have no reason to disbelieve that it was done at the most appropriate time, given the circumstances of the move into the hospital.

Q And then we hit the-- in a sense, a discussion we've already touched on, which is that, essentially, investigation showed that on a whole range of issues the rooms were just not suitable to move-- well, for the move that had actually already taken place.

A Yes.

Q And the decision had to be taken to go back, and I won't go back over that with you. Bear with me. And we've already discussed the exchanges about whether the original clinical output specification at the time that the decision was taken to move the BMT unit in was or was not adequate. So again, we'll not deal with that. On page 34, you return to a topic that, in a sense, we probably discussed fairly early on which is PPVL rooms, where you say in 125 that you were trying to deal with this issue, not just in one area, but across the whole site.

A That's correct, yes.

Q Because there were issues, and just so I've got your description

correctly, that they weren't delivering what you wanted them to deliver, is that the gist of the problem?

A Yes, yes. That was evidenced by both the quality of the build and air sampling that we did at the time, which showed that the particle counts and there was fungal spores present in the transport rooms in Schiehallion. When we-- I didn't personally examine all of the other rooms. I asked one of my facility's colleagues, Mary Anne Kane, to-- well, she was detailed to go and do it following the management meeting and she confirmed that there was the absence of HEPA filters and appropriate ceiling in rooms right across the site. So it looks as though the problems that I'd identified in the Schiehallion more personally were replicated in all the PPVL rooms across the site.

Q So this is your juggernaut of problems that you mentioned earlier?

A The PPVL room is shortly followed by the Adult Bone Marrow Transplant Unit, yes.

Q On page 35 of your witness statement in paragraph 126, you explain that even after you've checked things like HEPA filters and seals, you then had to do air sampling. And then, you say there was a problem with interpretation of air sampling as to what was acceptable. Now, the question I have about that,

because I think you've said that already, is was there not already air sampling done both in the old Schiehallion unit and in the old Beatson unit, which were both BMT units, which you could readily use?

A Yes, but again, they were based on professional opinion, not detailed guidance. The problem arose, and we were doing kind of longitudinal air sampling so we weren't relying on a single point in time. The problem arose that, occasionally, you would find a fungal spot in the air sample. That had happened previously, rarely in the Schiehallion unit at Yorkhill for a variety of reasons, either people bringing things into rooms or the rooms not being appropriately used, but there wasn't actually a kind of baseline, if you like, for how we'd expect these rooms to behave.

So the question then arose, "Okay, if you've got one fungal spore present in five consecutive air samples, does that actually mean that you can't actually say that it's past the air sampling?" There is evidence in the literature that the more you-- the more intensively you look at controlled air environments, the more often you find the occasional fail, and it was trying to decide the significance of those, if you like, blips in the air sampling that I'm referring to there.

Q Am I right in thinking that air sampling does two things? One, it tells you how many particles are in the air, but not what kind they are. So they could be completely neutral, as it were, or they could be fungal particles. And then you have to do further tests to see what grows, as it were, from----

A Yeah, that's a very reasonable-- So, it takes two separate processes because the particle counter is a physical measurement I don't understand the physics of, which gives you an immediate result. There is a possibility though that, as you say, the particles can be inert. So, for example, if there's dust created within the HEPA filter falling in, it can give you a high particle count without a raised fungal count, but usually both of the tests are done together.

The problem is that you have a lag between the availability of the particle count, which is immediate, and the culture which can take-- you've usually got an indication by 48 hours, but for complete identification it takes five, possibly seven days. So you could occasionally find you're in a position where the particle counts are acceptable because the standard for the particle counts is in the hundreds of volume, whereas a single fungal spore could possibly be a problem and you'd know that the particle counts were right, but you can't at that point say that all the particles aren't definitively fungus. So

you're looking at the two measurements in concert to try and gain a full picture.

Q In the next section of your witness statement, you're talking about, as it were, the next stage which is fixing the problems with Ward 4B. Now, we've seen the kind of things that John Hood had set out previously that you had contributed to. Was the big problem not that within the capacity of what had already been built, you couldn't get everything that would ideally be provided in the build?

A At that stage, that wasn't clear. No. At that stage, we provided a specification, as we thought, for the Bone Marrow Transplant Unit. John Hood, I think it was Anne Harkness that led the process around this, pulling all the details together with the Estate's colleagues. We also took advice from Peter Hoffman, who is a clinical scientist specialist in Colindale at London, as to what things he would be concerned about and what else he would want to see in the specification, and those emails should be present in the the bundle.

Q The discussion that we're following through here probably follows on in terms of time sequence from around July of 2015. Now, in paragraph 131 of your witness statement at page 37, you mention HPS, because you're asked, you know, who was involved. And you say, "We involved Peter Hoffman at HPS to get external experts to provide advice." Now, it's been suggested to me and I want to suggest to you that you didn't actually go to HPS in July 2015, is that not correct?

A Yes, I think that's an inaccuracy from my recollection. Having seen the email, I think he refers to HFS because he's concerned that he has no formal standing in Scotland and that HFS should be involved.

Q Yes. Well, whether it's HPS or HFS, leave aside for the moment. So Peter Hoffman says, "Well, I've got some thoughts on this, but I don't have any locus here because you've got your own specialists." The question I'm trying to get to is whether, in fact, as the narrative sequence suggests, you did or did not go to HPS in July because the information I have suggests you didn't.

A I recollect HFS being involved in the discussions by the engineering team. I wouldn't have gone to HPS at this point because it was primarily an engineering problem. The expertise in HPS is around clinical aspects. HFS would be the place that I would go to. I can't confirm that there's any emails or anything, but my understanding was that part of the specification being developed over that time, that HFS were involved.

Q Can I suggest to you that HPS

were first involved by Dr Inkster in November of 2015, is that possible?

A Yes. Yes, that's-- I think that's the case. I think by the end of, I think, November 2018, I think the initial set of works had been undertaken, and Dr Inkster as the ICD for that area was taking forward the subsequent moves of patients in and she thought at that point she would like to involve HPS, which if she wanted to do that, that seemed perfectly reasonable from my point of view. She obviously had concerns, she was making that decision; if she wanted to refer to additional people then that was entirely her prerogative as the ICD for that area.

Q And, again, just for clarification, at the end of 131, you say, "The final decision on the revised specification was to be made Jennifer Armstrong." Is that right?

A I'm not sure. I think, ultimately, all of the clinical decisions would be taken by her, but I think there was a group involving Anne Harkness. That's my recollection that was actually leading on specification.

Q Specifications of a rectification to a clearly deficient unit, it'd be quite a technical issue.

A No, no. That's obviously an incorrect recollection on my part. As I say, at this point I was working solely from the minutes of the BICC meetings and a couple of AICC meetings. I had no access, at the time I gave that part of the statement, to any of the email-- ones which I've subsequently had access to as part of the Inquiry.

Q I suppose that the obvious question about paragraph 132 is you say there Peter Moir was leaning on the review to further inform the specifications for the rectification, so this is for the fix. He was trying initially to compare the specifications which were provided to what was actually present in the Beatson. The obvious question might be, well, why on earth was that being done then? Should that not have been done the first time around?

A Yes. I mean, it was in the original clinical specification that the facility should be provided to the standard of the Beatson.

Q Yes, and then essentially you proceeded to get the details sorted out and try and get the thing fixed.

A Yes.

Q So far as you could, anyway. Can we just come on to page 38 of your statement, where you're talking about HAI-SCRIBE? It's a question that, in one form or another, has been put to a number of witnesses. HAI-SCRIBE is essentially a checking system to ensure that there is a compliant build from an

infection control perspective. Is that right?

A No. HAI-SCRIBE probably has two main uses. The use we discussed earlier on was basically a checking tool after a new build, but the main use we put it to in Glasgow, and it had been used for a number of years, was making sure that projects that were being built in patient areas were managed accordingly to reduce the risk of infection to patients. So I specifically raised this point here because I was told that I think it was Brookfield were going to be the contractors who were doing the rectification work on the adult Bone Marrow Transplant Unit. Brookfield had had experience of working on the building site, as I was aware of it, where they were basically in an empty hospital without patients. I wasn't confident that they knew all the parts of HAI-SCRIBE, so I was just highlighting the importance of getting the HAI-SCRIBE process alongside that process because there would still be patients in the hospital, so I didn't want the contractors to be treating it like a building site.

Q Can you tell us whether anything similar to that was done, to your knowledge, at the end of the building process before handover?

A From what you've told me today, I would imagine not. As I said, the HAI-SCRIBE documentation clearly outlines for new projects that the project manager, I think it was, should be responsible for the stage 4 HAI-SCRIBE, a major part of the HAI-SCRIBE in terms of what you call the tick box, which is actually a process that you have to work through rather than a checklist, lists compliance with HTM-0301 as necessary, so I can't see how HAI-SCRIBE would have been performed at that point.

Q So, whether it was a formal HAI-SCRIBE or not, if somebody was checking things off at the time of handover, given what you found, you don't see how that could possibly have been done because you found all these things that were wrong.

A And not just myself. Dr Inkster and Dr Peters were also involved in finding things that were wrong in broadly the same timeframe, so it was a number of people finding problems across the hospital in that time period.

Q Thank you. One question for you about pressure testing, which you touch on at the top of page 39. We had from another witness that pressure testing, which sounds as if it was just some sort of simple exercise, can actually be quite disruptive because it involves blowing quantities of air at considerable pressure through a lot of spaces, some of

which will have dust and the like and may have other things in them. Is that right?

A It doesn't blow air through spaces, as such. It basically blows air through the inlet grille at the bottom of the PPVL room to pressurise that room, and it's the pressure retention. My understanding of it is how long that overpressure takes to leach out is the measure of the permeability of the room. My main concern was the actual physicality of generating that pressure in a hospital environment. I'm trying to think of something broadly the same size. I would say probably four times the diameter of the inlet grilles there was the size of the fans that were being brought onto the ward to generate overpressure, and they were being plumbed to the front of the PPVL room doors. The airflow was directed through those rooms, so it wasn't going out into the corridor, but it was, from a nursing and medical staff point of view, not a normal procedure that you would be seeing in the run-of-the-mill-hospital.

Q You mention at the top of page 39 concerns from the clinical and nursing staff. What were the concerns?

A It was mainly about the noise, because these fans actually made quite a lot of noise, they took a while to get the rooms up to pressure, and just basically an understanding of the process that was

going on. So I think the Infection Control nurses were speaking to the nursing staff. I wasn't personally contacted by any medical staff to raise concerns, but I was aware that people were just wondering what these big fans and ducting things were doing in their ward at that time.

A In the next section of your witness statement, you take us through the progress of this rectification. The consistent theme of what you say here appears to be that some people thought it was going to be done very quickly and were saying so, but you were wondering why on earth they were saying so because there was no realistic chance of them finishing in the kind of speed that some people thought.

A I had no experience of this, but just purely the logistics of finding the HEPA filters – at one point we were flying HEPA filters over from Ireland to try and get these things done – fitting the HEPA filters, getting the specialist engineers that need to do the various aspects of commissioning lined up at the appropriate time to do the testing, and then the delay we've just discussed about the final, if you like, microbiological test of culture in the organisms is not something that happens very quickly. It's a complex process and it takes time.

Q Yes, but someone somewhere had an even more inaccurate guess than

any one you might have because in your witness statement you say-- Paragraph 140, which is talking about a meeting in July; time frame slipping to a later date; and at the foot of the page you're talking about November, a lot of the work's been done; and then over the page, 143, a meeting at the end of November. There's a reference to the BMT service moving back, but you were nowhere near being able to move back at that point.

A That's my recollection. I don't recall there being any realistic options of the service moving back. The patients were back, unfortunately, like you said, via the Queen Elizabeth Hospital. Back in the Beatson, there was no ongoing patient risk to those patients. The ward was being utilised as extra beds for the the winter pressures, so there was no clinical risk, and I don't know when the patients eventually returned to the Queen Elizabeth Hospital, but I think it was after my departure from Glasgow.

Q We just looked briefly at 145, where you're asked about a particular document, and perhaps we could just have a look at this, which I think is bundle 3, page 36. Now, you had explained who was doing what in this but this, you say, is a document requested by Teresa Inkster. How does that fit with the narrative you've been giving us?

A Because Teresa Inkster was, at the end of November, the Infection Control doctor for regional services and the Bone Marrow Transplant Unit was part of regional services, so she was taking forward the moves back to the Beatson. I think at that point the contractors had finished the first tranche of work they were planning to do and I recall having a meeting with Teresa, I think, just to discuss some of the things that we actually needed to do. I think it was around making sure the validation was okay (inaudible) three or four points from my recollection, but I think she was still nervous about reopening the Bone Marrow Transplant Unit, given the experiences that we'd all had, and suggested that HPS get involved basically just to review the specifications and to find out where there were any deficiencies in the specifications, which at the time seemed entirely appropriate to me. As I said, she was being asked to do this. If she had concerns, then it was absolutely within her gift to to get additional advice.

Q Yes, and we see from the first page of that document, in the heading "Background" at the end of that section, this SBAR focuses primarily on the 4B situation, and it's noted that HPS have been requested to support NHSGGC with other areas including the Schiehallion ward, critical care and the ID unit. So,

this is an SBAR, so situation, background, assessment and so on. Under "Assessment", "Situational assessment undertaken by HPS". If we go on to the next page, please, what was done, who was contacted, a list of guidance and so on, including discussions with Mr Hoffman, and we see at the foot there a reference to the most important aspects, including rooms that are held at positive pressure, are sealed and HEPA filtered, and then why they're HEPA filtered. I assume you agree with all of that.

A Yes.

Q Then we go on to the next page. This is a more detailed discussion about where the filters should be, and we see, about half a dozen lines down in reference to positive pressure, 10 pascals. You're familiar with that requirement?

A From the previous discussions, yes.

Q And a monitoring system. In other words, somewhere there has to be an alarm that lets the nurses know if the pressure is down.

A Yes, I suppose down or up.

Q Ceiling tiles not recommended, and then recommended bedroom air changes, SHTM 03-01, ten per hour. Was that ever achieved in 4B? Ten?

A Not to my knowledge, but as I say again, the final process lasted long after I had left.

Q Perhaps we could just see the end of that document for completeness. "Recommendation", and then there's a list there, many of which we've just touched on, bedroom air changes, 10 air change must be achieved, ceiling and so on and so forth. You have no reason to quibble with any of these requirements?

A No.

Q Thank you. Later in your statement, you reference a series of minutes of various committee meetings in which lists are provided of people being chased for this, that, the next thing. A lot of validation chasing, among other things. I think it's in one of these, and I'm not going to waste time digging it out, but someone suggests, "Well, why don't we do a letter to David Loudon?" which, from the outside, sounds a bit odd to somebody who is presumably somewhere at hand and can be accessed.

A I don't recall that part of the email trail.

Q When we see the end of paragraph 147, which appears on page 42 of your witness statement-- I'm just trying to get a picture here. You say at the very top of that page, "It was my priority to protect patient safety and resolve issues as they arose." Does that

mean you were largely reactive?

A Yes. In the context of the problems we've just outlined, yes.

Q Thank you. I think you make a point further down that page about the division of labour between yourself and your colleagues in Estates, which we've already touched on, and on page 43 of your witness statement, you made a point I think you probably made earlier, that due to the size and complexity of the site, it was difficult to manage from an infection control perspective. Is that right?

A I think so. It was the balance between maintaining continuity for the patient as they journey through different parts of the hospital with the complexity of a single person being able to manage all this.

Q Thank you. I'm going to move past some of your narrative of the processes because either we've heard about them or it's very clear what you're laying out for us. I just wanted to touch briefly on something you deal with on page 47, which is the Water Safety Group. There has been some discussion with other witnesses as to the Water Safety Group. The unkind version is they did a lot of talking but they didn't do much else. You sat on that as a backup to Mr Walsh. Is that right?

A Yes, I think the 2014 guidance around Pseudomonas changed, slightly, the nature of the water management that was happening in the hospital. I think it was 2014. Prior to that, the Water Group had been predominantly an engineering-based committee with input from Infection Control as required.

Subsequent to that, a lot of the recommendations in the Pseudomonas guidance relates to the use of water in clinical areas, so I think people-- you know, management of water. So, I think that agreement was about-- between Tom Walsh and-- I think it was Mary Anne Kane, that we would sit on the Water Group and mainly input into the Pseudomonas guidance. I think Pamela Joannidis, the nurse consultant, was tasked with implementing that guidance across NHS GGC, but we were also there if there was any requirement to have any Infection Control input into Legionella risk.

Q The reason I wanted to ask you about this, wearing your Infection Control hat, is that in paragraph 168 you say that:

> "The Water Safety Group members are brought together to share responsibility and take collective ownership for ensuring that all foreseeable water-related risks are identified and assessed...

appropriate control measures and monitoring strategies are implemented and... control plans are developed. The Water Safety Group should ensure that each hospital has a Legionella risk assessment."

Now, we have evidence about a Legionella risk assessment being instructed and produced. In the hospital that we're talking about, did that not mean that you had a responsibility for ensuring something was done about that assessment?

A When was that?

Q 2015, it was produced.

A Was that the DMA Canyon-----

Q Yes.

A -- report? I was never shown a copy or had any knowledge of the DMA Canyon report. As far as I know, it was never produced at the Water Group.

Q But you would be aware that a pre-occupation water-- Legionella water risk assessment was required, would you not?

A No.

Q You weren't?

A No. Again, that was an area where it was-- Estates were the leaders in that. We would be basically talked through the process by Estates as to what was necessary and what wasn't. Legionella was not really the remit of the Infection Control team. Risk assessing

the wards as to Legionella risk and dealing with any outbreaks or positive results from Legionella would have been the remit of the Infection Control team, but the water management is largely an Estates function.

Q Well, I can understand that they have to manage the water system, but your narrative in 168 suggests that the Water Safety Group should ensure that each hospital has Legionella risk assessment, and that's the group that you were involved with.

A Yes, and my understanding was that we had a Legionella risk assessment for the hospital. We had-- I wasn't aware of a requirement for a pre-opening Legionella risk requirement-- risk assessment.

Q Would I not be right in thinking that ensuring there's a water risk assessment also means ensuring that something is done with it once it's produced?

A Yes, absolutely, but as I say, I wasn't aware of that risk assessment, so I couldn't do anything about it.

Q So, did you know one had been instructed?

A No.

Q Did you make any attempt to find out whether there was one?

A No, because I wasn't aware there's a requirement to have one.

Q Thank you. Can we jump onto another document that is a little puzzling, perhaps, in 175 on page 49? Can we just have a look at this, please: bundle 27, volume 3, page 335? Now, I wanted to look at this page first, because it gives us, like, a heading. This is something that happens after you've left and, as I understand it, you've been approached to give some answers to some questions and you've answered these questions.

A Yes.

Q The heading to this document is:

> "...some responses received from Dr Williams re his involvement as ICD in commissioning of the [hospital]."

From which you might think we're about to see something fairly extensive, covering a whole range of issues. If we go onto the next page – notwithstanding the heading, and quite why this was done I don't know – it says:

> "Q Were you involved in the design of the water system...
> A No.
> Q Were you involved.. with the sign off of the water system...
> A No.
> Q Did you review the water test results... as part of the project handover..."

I think earlier in your statement you said you witnessed a sampling process, is that right, to check that it was correct?

A I witnessed the sampling process. I also-- Ian Powrie took me through the spreadsheet where there was fails of the total viable counts on that, and we reviewed the spreadsheet of results. My recollection is there were a few sporadic raised total viable counts around the hospital, nothing to suggest a systematic problem, and the subsequent remedial works put in those areas with Estates cleared that problem.

Q This was right back at early occupation of the hospital, is it?

A This was at the very beginning of when we took over the hospital, yes.

Q Yes, and these are your answers.

A Yes.

Q Just checking there's nothing on 337, please? No, we're onto a different document entirely.

A My recollection of that document is I was approached by Tom Walsh to say that HFS were doing an investigation into the Queen Elizabeth Hospital, "Would I be happy to answer questions to assist that investigation?" to which I obviously replied, "Yes." Those were the questions that were sent to me, and the answers are as you recall.

Q We'll go back to your witness

statement. In paragraph 176 on page 49, topic of taps, which we've had lots of evidence about from different witnesses. Can I just check – it's not entirely clear – were you involved in the issue of tap selection or not?

A Other than saying that they should be to the current SHTM, which I discussed earlier on with-- that was the majority of things that we were discussing very early on with Jackie, the Infection Control nurse that led the project. It wasn't a, "Use this tap." It was, "These taps must be compliant with the guidance."

Q The issue, as we've heard, is that some taps had been-- well, all the taps had been ordered. Some had been installed. Some hadn't. That's the information we have. According to your statement, you're saying a risk assessment should be completed, and if the risk assessment was put in place, then taps fitted would not need to be replaced, but what about the areas where the taps hadn't been fitted?

A Again, that's my recollection of the process at the time. I've subsequently had the advantage of seeing some documents and some emails around this, and it looks as though Dr Inkster was involved in a-- quite an extensive series of emails around the utility of the taps.

This culminated in a meeting of-- I think it was HFS, HPS, some external experts in water, and the NHS GGC Estates Department, and I think it was that recommendation that was taken forward. I wasn't aware of any recommendations about replacing taps or putting ones that weren't fitted. It was dealt with by this specialist group.

Q Thank you. Can we go on to page 51 of your witness statement, please? I think what I want to ask you about here is you have a situation discussed in paragraph 182 where Christine Peters, Teresa Inkster and Pauline Wright all say they want to resign. Now, we know from your earlier evidence that sometimes people do Infection Control for a spell and then they move on to something else, but this was something different. So, presumably you had a very good idea, you would think, why all of a sudden three people all wanted to resign at the same time?

A No, I had absolutely no idea why they resigned at all. I kind of understood it was a difficult time for everybody. Everybody was kind of finding problems in the new hospital. Everybody was busy, but this email came to me completely out of the blue. I had no idea of why they resigned. Obviously, my initial response was exactly the same as yours, "What's going on here?" you know "Why have three ICDs resigned?"

So, I think, from my recollection, the email came from Brian Jones rather than the individuals who wished to resign, so I telephoned Brian to say, "Brian, can you tell me what's going on here? You know, what do we need to do about it?" and he said to me that he wasn't able to speak about it. There would be an ongoing process to discuss this that I would be informed of at a later date.

That left me basically with-- for Infection Control, doctor sessions was down. I put Dr Wright was due to demit. As we discussed earlier, people leave and move on from Infection Control. Her replacement had already been indicated to me. I can't remember exactly what the doctor's name was, sorry, but there was a replacement for Pauline Wright, so she resigned, I think, on the Wednesday before she was due to stop on the Friday.

That left us with Teresa Inkster and Christine Peters' sessions. I had an urgent meeting the next day with Tom Walsh, Sandra McNamee, Linda Bagrade and Alison Balfour, who were the two other ICDs that were left. There would have been three of us on the Monday, but I don't think I'd been informed of the details of the person who was replacing them at that point, so I couldn't invite them to that meeting.

We discussed, basically, how we'd continue the service while I was awaiting this process that Brian Jones had outlined. Alison Balfour and Linda Bagrade were both happy to provide additional Infection Control doctor cover to the Southern General Hospital, pending that resolution. We agreed that with Tom, as the Infection Control manager, and then I think it was the next day we took that view to Jennifer Armstrong, who was the executive lead for Infection Control, suggested this process going forward, and I was told by her she didn't wish to allow the two doctors who'd resigned – because it was only two by that time because, as I say, Pauline Wright wouldn't have been imposed by then anyway – to demit their sessions

So, I was left with a team, two of which had resigned. I didn't know the reasons for the resignation. There was no indication of the reasons for the resignation given to me by Jennifer Armstrong during that discussion. It was a very difficult situation, as you can imagine, to manage a team with two people who basically didn't want to be there.

Q It might be suggested to you that, as the lead, as the coordinator, it seems odd that two experienced individuals – let's leave aside Dr Wright, although she's also recorded as having wanted to leave – are saying they want to

get out, and you're the lead and you claim not to have any idea why.

A It may sound odd, but that was genuinely the situation at the time.

Q The process that you say Brian Jones outlined, what did he outline?

A He basically just said there would be a process. He didn't outline. He said there was something along the lines of, "There will be a process. You will be involved or you will hear of it sometime in the future." There was no time frame given. There was no details of a process. It was a telephone call at the end of the day.

Q It just seems a rather odd narrative. You claim to have no idea why this is happening. Brian Jones tells you nothing. You go to Jennifer Armstrong. According to your statement at 184, she tells you nothing. So, again, looking from outside, it seems a very odd situation.

A Yes, I can see that, but that actually was the situation at the time.

Q So, you say in 185 that you got nothing from Jennifer Armstrong about why. So, you were trying to run the service with two pretty senior people saying they didn't want to be ICDs, and you say in 185 they tried to undermine your position. What do you mean by that?

A It was basically occasions when they were second guessing decisions that I'd made, more so in the microbiology laboratory where I was trying to manage the paediatric patients as my half role. So, for example, I would start a management plan for a patient. I would come back the next day to find out that somebody else had been and said, "Oh, we don't think that's a good idea. You should do that." There were incidents of that nature.

Q Right. You say in your statement, "They took any opportunity to undermine my position," and you've dealt with consultant microbiology, both in Infection Control. What were they doing in Infection Control, according to you?

A There was an incident around a Serratia outbreak in the Neonatal Intensive Care Unit, where there was a number of cases of Serratia, which were found on screening rather than on infections, as such. We'd been having Infection Control meetings all week, and I believe you've gone through the kind of HIIAT score in detail. So it was scoring green as HIIAT at that time, but the clinical team were actually aware that, unfortunately, a child-- a baby was going to die of things associated with Serratia, rather than of serratia, at the weekend, which was obviously going to raise the HIIAT score to red.

It was the nature of the escalation of that HIIAT score that concerned me, and that it was implied that nobody had been

doing anything about this outbreak, it had been completely ignored, whereas actually there would be a series of IMT minutes. We were managing the situation in the way we would normally manage it, and the clinical team were quite perplexed as to why that escalation had happened when they were clearly of the view that the death was not of, but with, Serratia. It was absolutely in line with the guidance. I think it was the tone with which it was done that was concerning me: the implication that things had been ignored, things hadn't been done properly, when actually with the involvement of the Infection Control nurses, who are some of the most experienced Infection Control nurses in pediatrics at the time, the investigation was being managed appropriately. We might not have taken an environmental sample when somebody thought there might be an environmental sample necessary but, again, as part of the process of the HIIAT, Health Protection Scotland were-- came in afterwards and, again, didn't find any major flaws in the whole process.

Q Yes, but if I understand from that answer, the escalation of the HIIAT score to red was entirely in accordance with correct procedure.

A The escalation of the HIIAT score per se, but if the escalation of the

HIIAT score had been, “We've been aware of this situation for some time. It's been dealt with by an incident management team. The child was carrying the organism, not dying of the organism,” then I think the conversations would have been of a completely different tenor.

Q You actually deal with this Serratia outbreak later in your witness statement, in particular in paragraph 201. I know you deal with it, to some extent, in other paragraphs as well. So, if we look at 201 on page 57, and you say-- Well, as I read that paragraph, that was a criticism of the HIIAT process rather than a criticism of Dr Peters and Dr Inkster.

A No. It's not a criticism of the HIIAT process. It was a question in response to what is the HIIAT process and when is it useful and not useful. So, the HIIAT process is more useful in infections such as norovirus and Clostridium difficile, which are the normal run of the mill. It doesn't take into account a rapid swing from green to red as a result of one case. So that was the context of that answer.

Q According to your narrative here-- I mean, what you're saying is there was Serratia found but it wasn't the direct cause of death.

A That's my recollection of it, yes.

Q But in your witness statement here, you say:

> "The fact of the death escalated the HIIAT score from green to red."

Was that not just a product of the HIIAT system?

A Yes, it was. Yes, but it wasn't the escalation. As I say, it was the narrative around the system, as relayed back to me by the clinicians that were on over that weekend on the Neonatal Intensive Care Unit.

Q Thank you. Now, in your final comments, you mentioned various things, particularly in relation to previous investigations. I think we see these on page 58. In particular, you say that you were concerned with the implication that you left before you were pushed. Now, am I not right in understanding that at least-- although you've not seen it, you are aware of the existence of a document in which it is said that Brian Jones gathered opinions from a large number of consultants which made, shall we say, critical comments about your conduct?

A I've been made-- of that document and the document drawn up by David Stewart as part of the Inquiry. None of those allegations were ever put to me at the time, nor was any allegation of any problems with bullying or being a team player, either in that post or in any post that I've had in the NHS or outside.

Q So, none of this had anything to do with you leaving?

A The reason that I left is that basically-- I wasn't aware of those documents at the time, so I couldn't have actually taken those into account. My reasons for leaving was that being the lead Infection Control doctor for a board the size of Glasgow is actually quite a hard job. You rely on support from your colleagues in management above you and your colleagues who are nominally reporting to you. Without that confidence, then it became impossible to deliver the job to a standard that I would have wished to deliver it. So, at that point, I tendered my resignation.

Q My Lord, I have no further questions for this witness.

THE CHAIR: Professor Williams, what I need to do is discover whether there are any other questions in the room, and what I'll do is I'll break for about 10 minutes to allow Mr Connal to canvas whether there are such questions. So, can I ask you to return to the witness room? Thank you.

(Short break)

THE CHAIR: Professor Williams, I

understand there are perhaps a few more questions.

A Okay.

Q Mr Connal.

MR CONNAL: Just essentially two topics, both of which we've touched on. I just need to go back on them very briefly. The first one is relatively straightforward. You have told us throughout your witness statement and then orally today that you repeatedly asked for things like validation from the Project Team. Apart from Fiona McCluskey, who features in one exchange in your witness statement, are you able to tell us any other individuals in the Project Team who responded to you this topic?

A No, I don't have access to emails other than the ones that have been provided by the Inquiry.

Q And you can't remember any other names?

A I don't remember any other names, no, sorry.

THE CHAIR: Now, the question that-- as was put to you, anyone who responded-- Is there anyone who you can remember directly asking?

A I think it were the questions were asked as part of the SMT process, so there would be emails after the SMT meetings, not necessarily from myself to the Project Team with requests for----

Q Right. So you probably did not make any requests specifically to a person, but rather by email to the team?

A Yes.

Q Right.

A For members of the team.

Q Okay. Thank you.

MR CONNAL: The other question I have for you involved going back to a document we looked at a little earlier, which is in bundle 14 at page 25. Bundle 14, volume 1, page 25. We probably don't need to go into the details of the document, but you remember being asked about meeting "The technical guys" following a heading of, you know, M&E development, and we know that you went to a meeting subsequently. Can you tell us what technical guys you met?

A No, I'm sorry. I don't have any recollection of that at all.

Q Do you know whether they were board technical guys or Multiplex technical guys?

A I genuinely have no recollection. There should, again, be emails of arranging the meeting, I would imagine, because once our availability was confirmed then they would also confirm their availability. So it may be possible to glean that from emails, but I have no recollection of who the technical guys were.

Q Can you tell us whether you discussed ventilation for specialist areas

of the hospital?

A I have no recollection of discussing ventilation. As I say, from the email follow-up where I'm responding to requests at that meeting, it consists entirely of output specifications for renal transplant wards.

Q A follow-up question to that is you, obviously, had a particular interest in the Schiehallion unit because you had knowledge of the Schiehallion unit at Yorkhill and the fact that it was moving. Do you remember discussing any ventilation issues for the Schiehallion unit?

A No. The first recollection I have of any details of the Schiehallion unit was around when I was contacted by Professor Gibson to say that the Schiehallion unit was going to be provided with the PPVL rooms.

Q Do you remember whether you were told anything about air change rates that were going to be provided?

A I have no recollection of that.

Q The difficulty we face, and I'll put this straightforwardly to you, is this, that we know from the document you didn't know about, i.e., the M&E log and so on, that as far back as 2009 there appeared to be an arrangement not to follow SHTM guidance in certain respects in terms of air change rates. So, that's back in 2009.

A Yes.

Q So the question comes to be, when you're going to a meeting with "The technical guys" to discuss M&E issues in 2012, you tell us that you're always saying, "Build to guidance." That's your standard response to a whole range of issues, but if somebody was telling you about ventilation then, they'd have had to say they weren't building to guidance.

A If somebody had have said they weren't building to guidance, clearly I would have escalated that because that would've been a concern. I mean, our whole response to the technical build throughout was, "This needs to be built in accordance with SHTM guidance." If somebody at a meeting would have said to me, "We're not building this guidance, what do you think about that?" My response would have been, "Well, I'm terribly sorry, firstly, I don't have the expertise to do that; secondly, if you're deviating in any way from the SHTM guidance, that would be something that I would need to escalate and discuss with senior Estates colleagues," in the same way as I discussed the specifications for the PPVL rooms when it became clear that the patients moving into the hospital were a different type of patient.

So, again, I have no recollection. Dr Inkster, I think, from the email trail was also at that meeting. I don't know

whether she could recollect the details of that meeting.

Q The reason I'm pressing you a little bit on it is that the email to you from Jackie Stewart which starts this trail, which is specifically directed to you, says, "The technical guys will outline the water systems," let's leave that a moment, "Ventilation systems in the generic format, e.g. bedrooms will have X amount of air changes," which suggests at least that one of the topics for likely discussion was air change rates. Even in an ordinary single room, that might have involved revealing that the air change rate was going be 2.5 instead of 6.

A Yes, there was-- I mean, I have no recollection of air changes being discussed. The first time I became aware of the derogation from 3 to 6 air changes was when I found it on the documentation for the Inquiry website. That'd never been discussed with me prior to that date.

Q I have no further questions, my Lord.

THE CHAIR: Thank you. Thank you, Professor Williams. That's the end of your evidence and you're free to go, but thank you both for your attendance today and for the preparation work in preparing your statement and preparing yourself to give evidence. However, with my-- you are now free to go with my thanks. Thank you.

THE WITNESS: Thank you very much.

(The witness withdrew)

THE CHAIR: All right, I think the plan will be to resume tomorrow at ten.

MR CONNAL: With Dr Harvey Wood, my Lord.

THE CHAIR: Right. Well, I wish everyone a good afternoon and we'll see each other at ten tomorrow.

(Session ends)