SCOTTISH HOSPITALS INQUIRY

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Hearing Commencing
19 August 2024

Day 22
24 September 2024
Prof Stephanie Dancer

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THE CHAIR: Good afternoon. Now, Mr Mackintosh, we have Professor Dancer?

MR MACKINTOSH: We have Professor Dancer, yes.

THE CHAIR: Good afternoon, Professor. Please sit down.

THE WITNESS: Thank you.

THE CHAIR: Now, you're about to be asked questions by Mr Mackintosh, who's sitting opposite you but, before then, I understand you're prepared to take the oath.

THE WITNESS: I am.

Prof Stephanie Dancer

Sworn

THE CHAIR: Thank you very much, Professor. Now, I don't know how long your evidence will take. We would normally sit between about two and four but if you want to take a break at any time just give me an indication and we can take a break. Now, Mr Mackintosh?

Questioned by Mr Mackintosh

Q Thank you, my Lord. So, Professor, I wonder if I can take your full name and your current occupation.

A My name is Stephanie Dancer and I'm a consultant microbiologist in NHS Lanarkshire and professor of microbiology at Edinburgh Napier University and more recently I've been invited to be a visiting professor at Strathclyde University.

Q And so what's the subject you'll be visiting at Strathclyde in respect of?

A It'll be medical microbiology.

Q Now, within NHS Lanarkshire, I mean, I understand doctors work a number of sessions in a week. How many sessions do you work a week at NHS Lanarkshire?

A Just two----

Q Just two.

A -- now. I'm partially retired.

Q And what are your research interests at Napier?

A My research interests are primarily hospital cleaning and decontamination, antimicrobial stewardship, MRSA control. I also teach when invited, and I'm also the PI for the NHS Assurance Scheme, which is a multi-million-pound project inviting research from across Scotland and elsewhere to look into environmental deficits in hospitals.

Q So, a PI is the principle investigator?

A Yes.

Q And when you say environmental deficits in hospitals, what do you mean by that?

A Water, ventilation. We're also interested in medical gases, infection control practice, and a number of other items.

Q Thank you. Now, you provided a statement-- a short statement to the Inquiry. Are you willing to adopt that as part of your evidence?

A Yes, but there is an amendment. I went back last week to look at all the emails and found that one particular email had not been placed in the appropriate folder. In my statement, I said that Professor Brian Jones----

Q Well, which paragraph is that?

A Right, I'll find it for you. It's paragraph 20.

Q So, that's paragraph 20 on page 77. I wonder if we can put that on the screen. Yes, and so you say, "Did Professor Jones reply to my email? If so, how? What was his response?" And so, do you want to change the response to the question?

A Yes, because he did respond to my email. An email had been filed in another folder and I'd missed it.

Q Right.

A So, may I read out his response to you now?

Q Well, when we get to that stage in the story, we'll do that.

A Okay.

Q So, what we'll just do is we'll note that the-- we'll cross out your answer to question 20 from your statement. We'll come back to that in oral evidence, and subject to the deletion of question 20, would you adopt the rest of your statement as evidence?

A I would.

Q Thank you. What I'll do is I'll work through. We'll get to that email in due course. Now, I understand that on 7 February 2019, you were asked by Professor Jones to assist in some way in the Infection Control team in NHS Glasgow?

A That's correct.

Q And you assembled a document of emails.

A Yes.

Q And now, can we put bundle 27, volume 7, document 56, page 574 on the page? Now, this obviously isn't the actual emails themselves, is it?

A Yes, they are. Well, not-- I just copied and pasted.

Q You just copied and pasted.

A Yeah.

Q Right, okay. So, what I thought we'd do is I'll ask you some questions about the events that are described in these emails and the other areas of interest to the Inquiry, and we can read them, of course, we don't need to read them out. What I want to do is start with the first stage on 7 September, when you say you were contacted via LinkedIn by Professor Jones. Now, this document we're looking at, you prepared it, I take it?

A Yes.

Q And does it contain all the emails, apart from the final reply from Professor Jones?

A It does.

Q Right. Now, in the reply, 3.08 p.m., presumably on 7 February as well?

A Yes.

Q Yes. There's a mention in the second line, the reply is, "Teresa Inkster wondered if you would be able, for two days a week, IPC locum, to help during the crisis." Now, at this stage, did you know what he meant by "the crisis"?

A Yes, I did.

Q And so did you know that?

A It was mostly chat at previous Microbiology meetings.

Q So, which Microbiology meetings would these be?

A Well, we'd often meet for professional meetings and also committees, and those could have been at Health Protection Scotland or conferences elsewhere, but I have to say I also had picked up stuff from the media.

Q Right, so----

A I had seen it in the newspapers.

Q So, at this point, you knew things from your professional colleagues at meetings, and you knew things from the media.

A Yes.

Q So, did you take it that "crisis" was a reference to all those events?

A Yes.

Q Right. Now-- And then on 11 February you replied. Now, you explain at that point you worked two to three days per week, shared between NHS South-- NHS Lanarkshire and Edinburgh Napier, so that's a different working arrangement from your current arrangements.

A Yes. I was working more then.

Q Right, and so this is-- well, this is 2019. Of those two to three days a week, roughly how many were NHS Lanarkshire and how many were Edinburgh Napier?

A Two NHS Lanarkshire and one at Napier.

Q And what was the role you then held at NHS Lanarkshire?

A I was still doing clinical work at that stage, and not just research. Now, I'm only doing research but at that point in time I was doing some clinical work, and that included out of hours on call.

Q And so within the structure of NHS Lanarkshire's Infection Control, were you doing Infection Control sessions?

A Well, I wasn't doing Infection Control sessions versus clinical microbiology. The two are very difficult to separate.

Q Right.

A So, if you're advising on a patient because of a particular organism, and the antibiotics you would think-- or you don't think should be used, automatically, you would then include Infection Control advice, if relevant.

Q But at that time in terms of-- what was your job title in NHS Lanarkshire at the time?

A That was consultant microbiologist.

Q Right, and----

A It was a single-handed job, originally, which meant that I did all the clinical microbiology, all the infection control, all the infectious diseases, because I was on my own in a 550-bedded hospital. And then, I think in 2016, I had a colleague who was appointed. It was recognised that the workload was quite heavy, and I then reduced my hours from then on and gradually began to reduce my clinical commitments.

Q By the time we got to February 2019, you were one of two microbiologists.

A Yes, I was.

Q Right, yeah. Now, in Glasgow we've heard evidence about how they have a particular structure involving a separate Microbiology team and infection control sessions managed through an Infection Control team. Is there something similar at Lanarkshire, or is it different?

A There's a team of Infection Control nurses and they are based at each of the three main hospital sites, and there's usually a lead for that. We also----

Q A lead nurse?

A Yes, a lead Infection

Control nurse who may or may not be based at your hospital and there will also be a surveillance nurse who's responsible for collating all the mandatory surveillance to be fed to Health Protection Scotland or now Public Health Scotland, as it is.

Q And how are the doctors involved in Infection Control organised in Lanarkshire?

A Well, originally, we all just did our own infection control, but----

Q For you-- for the hospital you were working at?

A Yes, for the-- No, for whole Health Board.

Q Oh, right.

A All of us would look after our own hospitals and when on call, we would apply our own infection control principles to the hospitals that we were dealing with out of hours, but, at some stage, and I don't know when exactly, it was decided we should have a lead for Infection Control, and we were asked to volunteer if we would like to take that on, and I think that there were sessions to do with that, and I think it was two sessions a week for whoever was the lead in Infection Control for the Health Board.

Q And who was the lead in 2019, in February?

A I suspect it was Dr Thomas Gillespie at that point, who was based at Wishaw.

Q And had you been the lead at any point?

A No, I've never been the lead.

Q Never been the lead, okay.

A Never.

Q So, at this point, you then have an email from Dr Inkster on 12 February. Now, she's offering to meet you for a coffee, and she thereafter describes huge workload and environmental issues, and you arrange to meet her on 14 February in the next email down. And at the end of the page, we have a reply from Dr Inkster, "It'd be great. Text me when you arrive. We can grab a coffee and I will fill you in."

Now, if we go to the next page, what I want to do before we go onto that detail, take that off the screen, please, I want to understand what happens at that meeting, from your recollection. So, when you went to the hospital, had you been to the hospital before?

A Yes. I had been before, but I can't remember how or why, so I met with Teresa and we had a cup of coffee----

Q Downstairs or up in her----

A -- and then, she took me-- It was in the main-- it was in one of the cafes near the main atria, atrium, and then she took me on a walkabout. So, I've-- Now, I'd definitely visited the hospital on at least two, possibly three occasions to meet with Teresa for briefing about what was going on and what I would be expected to do----

Q And this 14 February was the first one----

A -- but I can't remember exactly, of all the things that happened and all the places she showed me, and all the people we spoke to, I would not be able to assign to each of the specific occasions.

Q Okay. Well, let's break it down into subsections if we can.

A Okay.

Q So, the first of these two or three visits is 14 February.

A Yeah.

Q Right, and over what sort of period do the visits take place?

A It was just a day, or it was less than a day. I think we'd finished by lunchtime, because Teresa had her own work to do.

Q What I mean is you visited two or three times.

A Yes.

Q Was it all within that week, or did it take a bit longer?

A No, no. I think the second time was at least a week later.

Q Okay. So, without being able to identify which day you saw each of the things you saw, over these visits, where were you taken within the hospital by Dr Inkster?

A I was taken to a number of the wards.

Q Can you remember which ones?

A I can specifically remember the Paediatric Ward, the Special Care Baby Unit and Paediatric Wards, and that must have been over in the Sick Kids area.

Q Right.

A And the reason why was because Teresa was particularly concerned about cross-infection of Staph aureus with a child recently transferred from the Glasgow Royal.

Q Well, let's try and keep away from the patient information on our Inquiry YouTube feed.

A Okay.

Q But-- So, she took you to these wards.

A Yes. We also----

Q Where else did you go?

A We also visited the basement. She wanted to show me

the water reservoirs in the basement, so the tanks in the basement.

Q Yes.

A We also looked in some patient rooms that were unoccupied at the time. We had a walk round various other departments, walks through x-ray, I remember, where I picked up one or two things that I felt were inappropriate. And then, finally, she took me to the Microbiology laboratory, where I was able to meet some of the Microbiology biomedical scientists, some of whom I already knew, and then along to the office, which I was-- it going to be mine for the duration of the locum, which was actually Christine Peters' office, but Christine Peters was off on long-term sick leave at the time.

Q So, did-- at any point, did you go into wards in the adult hospital?

A I think we went into one of the wards, but I cannot remember which one.

Q Would it have been a general ward or one of the specialist wards?

A No, it was a general ward. I certainly didn't go into any of the Paediatric Haematology wards or the Bone Marrow Transplant Unit.

Q Okay, thank you. In addition to meeting Dr Inkster and the biological scientists you've just referred to, did you meet any other staff and speak to them at length?

A Yes, I met at least two Infection Control nurses, one of whom I knew vaguely, but I cannot remember their names. I also met a member of Estates, and maybe a couple of other members of the Estates team, but----

Q Do you remember the name of the Estates person you met?

A Yes, it was Mary Anne Kane.

Q Right, and in the conversations with-- What did you speak to Mary Ann Kane and the Estates people about?

A They welcomed me and said that they were delighted that I was going to come and help Teresa and, in the course of the chat, I heard about and I asked about the original build because I had originally worked as a consultant microbiologist at the Southern General, which of course was the forerunner of the QE, and I'd left in 2007. So I was interested to hear about when the building started and how decommissioning took place, how they moved the patients, when did the patients come from Victoria, and various other bits and pieces. And, in the course of the discussion, I heard that the hospital-- the new hospital, had been built very quickly. One

minute it was there, said one person, and the next, there were 11 storeys, and it was almost as if layer over layer of wet concrete was being placed within 24-48 hours. There it was.

Q Well, I wanted-- I wanted to just ask you about your time at the Southern General, and a particular question we've been asking everybody involved with Microbiology or Infection Control at the Southern General, how long were you there for?

A I was there for just over two years.

Q And what role did you then fulfill?

A I was a consultant microbiologist.

Q And was there, at any time, in the time you were at the Southern General, any discussion in Microbiology or the Infection Prevention and Control team about whether there was a risk of infections caused or influenced by the nearby sewage treatment works?

A We did talk about the sewage works.

Q Was that in the context of the smell?

A It was impossible not to because of the smell, which was not all the time. It was intermittent. Sometimes, you could foresee when there was going to be a bad smell. From my point of view, I felt it made a mockery of everything that we did in the name of Infection Prevention and Control, having the smell on the site, and when I heard that the new Queen Elizabeth was going to be built on the same site, right next to the sewage works, I was disappointed.

Q So, if we go back to the-- It's been suggested to us that there might have been a problem with the smell-- there was a problem with the smell, but that there was no particular investigations of a direct link in terms of infections caused by the sewage treatment works, and I wondered if you had any recollection about whether that was something you experienced or something different?

A No, no, and I would never have launched on such an investigation at that point in time.

Q Right. Was the patient population in any way different from the Queen Elizabeth at the Southern General?

A I don't believe we had a Bone Marrow Transplant Unit. We did have a neurosurgical institute. There was the mothers and we had surgical wards, medical wards. I think there were several intensive care. One of my responsibilities was Surgical

Intensive Care, and I also visited the Neurological Intensive Care Unit on many occasions. My trip to the Neurological Intensive Care was also a disappointment at that point in time.

Q So, sorry, before we go onto that, I just want to make sure we don't lose the chronology.

A Okay.

Q Sticking back to your time at the Southern General, so am I right in taking from you that whilst there was clearly a problem with the smell, there wasn't, as it were, ongoing concern about risk of infections from the sewage works?

A No.

Q No. If we go back to your visits with----

THE CHAIR: Can I just-- Really, at risk of repetition, I made a previous note that you thought the adjacency of the water treatment works made a mockery of Infection Prevention and Control. So, do I take from that it's a presentational issue rather than an infection risk issue?

A It's aesthetic.

Q Right.

A When you look at a hospital ward and you look around to see if it's clean, most people look at the floors to see if they're shiny, and if they are, it's clean, and that gives you an overall view, you feel assured that it's safe. When you smell something bad in a hospital ward, you're more concerned about the risks for infection with that smell. That was the same with the sewage works. We felt that there was a risk but we could not put our finger on it and there was absolutely no evidence to justify our suspicions.

MR MACKINTOSH: So, one of the things that I wanted to do, before we ask you about-- I ask you about what, if any, views you formed at the time of your visits with Dr Inkster when you met Mary Anne Kane and other people, I need to understand the source of all the information that you had. So, from what you've said so far, you knew something from discussion amongst microbiology colleagues at meetings about the hospital, that's one source. You knew something from the media. You knew whatever Dr Inkster had told you. What had Mary Anne Kane told you?

A Well, Mary Anne did say that there had been concerns during the building, for example, pipework. There had been discussion over the pipework. Firstly, it wasn't appropriate for plumbing in the hospital and secondly there were a lot of stores of fabrics and furnishings for the hospital,

for the hospital infrastructure, that had been delivered and were on the building site and left out in the mud and rain during the building. So I heard about that.

Q And then, apart from Dr Inkster and Mary Anne Kane, did anybody else on these visits give you any substantive information about what had happened in the hospital in the previous few years or the build process?

A I think it was intimated by one of the Infection Control nurses and indeed one of the biomedical scientists that there had been a plethora of infections which had been attributed to the environment.

Q And you'd heard that?

A Yes.

Q Right, okay. Now, what I want to do is now look back at your document, so that's bundle 27, volume 7, page 575, and this is an email. Firstly, I'm-- Raymond Hamill, effectively he's your manager?

A Yes.

Q Right, and so, this first email, this is you trying to-- well, this whole page is you trying to sort out the practicalities?

A Yes.

Q So, from your point of view as a two or three-day-a-week working consultant, what were the practicalities of offering to do locum work for NHS Greater Glasgow at Professor Jones' request?

A It wouldn't have made any difference because I'd got extra days free during the week and I could still keep my research ticking over even if I offered another day to go and help Dr Inkster at the QE, so----

Q But, in terms of practicalities, you had to sort things out to make it work though?

A Yeah, so the day-- choosing the day was important because, for example, Wednesday is the day that I usually go to Edinburgh Napier. So, Monday is a day I normally have off for personal reasons, so it needed to be a Tuesday or a Thursday. Friday is always a very busy day in Infection Prevention and Control and I wouldn't have wanted to have imposed on Teresa babysitting me, certainly for the first couple of months, on a Friday. So it either had to be a Tuesday or a Thursday, either of those was fine. We settled on a Thursday.

Q And this email exchange with Mr Hamill was effectively also to make sure that you are paid directly by Greater Glasgow and not, as it were, subcontracted through Lanarkshire?

A Yes, he thought that was more sensible, and I still had a research grant held by Greater Glasgow as well from my time at the Southern General.

Q So, what I want to do onto the next page, if we could, is you then sent a long email to Dr Inkster. Now, you make various suggestions and you raise various points and you offer Thursdays, and we can read what you've said to her at the time. What I suppose is-- the question is that, before we get to what then happens, if we are reading this or we're listening to you discussing your views about the hospital, how would you respond to the idea that you, to some extent, are merely repeating what Dr Inkster has told you?

A I'm not sure if I understand that.

Q Well, this is a----

A Teresa didn't know about electrolised water, for example, and also Teresa knew that I'd had a lot of experience in dealing with outbreaks directly due to the hospital environment. I also had the privilege of training Teresa when she was a junior doctor and we had several incidents there where she saw me in action, sorting out outbreaks and infection control incidents. So she would have known that I would have given her all the support that I possibly could.

In actual fact, I don't think that the resident experts, as they were at the QE at that point in time, knew any less than I did, and I certainly didn't know any more than they did but there might have been an extra addition that I would have brought to the table which would have helped Teresa. That would be firstly to support Teresa in what she wished to do, because she had the context and she knew the history and she knew what was going on, and secondly she also knew that I had no fear when approaching managers to ask for change, particularly if they were resource implications.

Q So, one of the things that's probably quite important to check in before we go any further is that you trained her. How long were you effectively training her for? What was the-- What stage in her career?

A It was when I was at the Scottish Centre for Infection and Environmental Health, which then turned into Health Protection Scotland, and it was from 2002-2005, and I was headhunted for this position because initially I didn't really want to go. It was-- They wanted a microbiologist at

the Scottish Centre for Infection and-- etc., because surveillance was becoming a big deal and MRSA was causing huge trouble across the whole of the UK and now in Scotland and they needed a microbiologist to be able to set up some of the surveillance initiatives.

So, when I went to the interview, they asked me, "What can we do to make you come to this particular position?" and I said, "I need some clinical work" because I didn't want to lose my clinical skills and the mess of a hospital and a laboratory.

Q So, where did you end up----

A They offered me three sessions at the Western General where Teresa was. So, for three years, I went for three sessions, so that was three mornings a week, to the Western General to help with teaching and with research and with clinical duties.

Q And so, at that point, you were a consultant microbiologist?

A Yes.

Q And was she one of the registrars?

A Yeah, she was.

Q I see. So, if we look down this-- onto the bottom of the page, we have her response, and so she reports to you on 15 February that-- Well, I'm slightly confused by the order here. The top of this page describes the email at the top of the page being from Dr Inkster. You met her on 19 February and emailed her, the one that begins, "Dear Teresa." The bottom of the page is a reply on 15 February, so could that date possibly be wrong?

A No, I don't think-- I don't know. I would have to go back and check, it might be.

Q Okay, we'll go to the next page, and you then email her on 22 February about a paper for the Scottish Government. Now, when you say "the Scottish Government," might you mean a parliamentary committee?

A It was the Health and Sport Committee.

Q Right.

A Health Hazards in the Healthcare Environment.

Q Can I just check we've got the right document in our minds, which is, if we can go to bundle 14, volume 2, page 419, document 124, is this the document?

A That's the document.

Q Right, okay. It's not-- I don't want to go through it today but I just felt it was important to make sure we're talking about the right thing. If

we can go back to the previous document in bundle 27, volume 7, please. Right. So, you have, in the third paragraph, a reference to, "I particularly wanted to say something about getting the windows open." Is that in the context of the document, not the hospital?

A That was the hospital. Natural ventilation is always superior to mechanical ventilation. When I heard that the new Queen Elizabeth was going to be built on the same site, I then surmised that they would be sealing the hospital completely with mechanical ventilation because of the smell but that would mean that you couldn't open the windows. Having natural ventilation in a room, whether it's a home or whether it's a hospital, you would find a particular, what we call, "microbiome" on surfaces within that environment.

Q If it's natural?

A Yes, if it's natural. So there will be a huge range of organisms that live-- contaminate the surfaces in a room with natural ventilation. When you seal the room, then you completely change that microbiome, so that the nature of the organisms on the surfaces are very different in a mechanically ventilated environment. Is it appropriate to tell you about a study to just give you a quick piece of evidence on that?

Q Please do, yes, briefly.

A I was involved in a study with Glasgow School of Art and Strathclyde University architects and we decided to do some sampling of specific surfaces in people's homes in East Kilbride. We chose 100 homes altogether and we wanted homes that were completely mechanically ventilated, sealed against the outdoor air, and those that opened windows, and those which had open windows but never did, or those that had open windows all the time.

And so, to cut a very long story short, we found that homes which were mechanically ventilated had a much greater significant preponderance of gram-negative organisms on hand-touch sites and other sites in the home. There was also an increased but not significant trend towards fungal contamination. So the upshot of that is, is that mechanically ventilated indoor environments, you will have a specific microbiome and there will be more gram-negative organisms and fungi. In effect, it's less healthy.

Now, there is something else to say about this, and that is the components of fresh air, natural

ventilation, is called the “open air factor,” or the OAF. There was a lot of work done on this about 60/70 years ago or so, and that work stopped for various reasons, possibly because it wasn’t seen to be that important with the advent of antibiotics and vaccines. We’d conquered infection.

But, in actual fact, the open air factor is something which does need to be scientifically categorised. I’ll give you another example. Patients in marquee with flu are more likely to survive than patients that are inside a hospital with the windows shut. So there is something in the open air factor that kills germs.

Q Just speaking practically, because obviously this Inquiry has----

THE CHAIR: I must be careful about, sort of, going----

MR MACKINTOSH: Please do, my Lord.

THE CHAIR: -- off the piste which it’s senior counsel’s obligation to keep me-- keep us all firmly on. Just one, as it were, housekeeping issue. You’ve described the study you did in East Kilbride. Has this been published in a peer-reviewed journal?

A Yes, it has. It’s had about 13 or 14 citations.

Q Right.

A Can you make that

available to the Inquiry? I mean, not immediately, obviously, but in the fullness of time.

A Of course.

Q Thank you.

MR MACKINTOSH: Like I say, if you could send that to us when you get home, that would be excellent. I wanted just to go back to the email and the reference to “getting the windows open.” Now, you, at this point, had been in the hospital for two or three visits and, at the risk of sort of pushing it too far, is that-- would that be a remotely practical thing to do in a tower block of the size of this with sealed windows or is that a sort of quixotic desire to change things from your point of view?

A I would have tried. I would have tried. Not-- There are certain areas in the hospital where you can’t open the windows. So, for example, bone marrow transplant or other transplant, wards full of immunosuppressed patients, you need to worry a great deal about the amount of fungi naturally occurring in the air, particularly during the summer. Aspergillus is the one that we most worry about, but the routine wards, the routine surgical and medical wards, I would have made a case for getting the windows open even if it was only a

trickle vent or a small window at the top of what was there already.

Q Before we leave ventilation, and you mentioned Aspergillus, from your point of view, when you think about a room in which you're placing a patient who is having a bone marrow transplant, firstly, would they be that group of patients we've heard to-- referred as "neutropenic" patients?

A Yes.

Q Secondly, there's been some discussion in the Inquiry about the importance of filters in their rooms. When you think about ventilation into rooms containing such patients, from your point of view, how important or significant is filtering as a protective measure?

A Extremely important.

Q Why?

A You should not host a patient who has no way of defending themselves with an obsolete bone marrow. It's been totally wiped out and the patient's on all sorts of different drugs to try and keep them safe. Anything coming through the air would represent an enormous risk for those patients.

Q So if we leave your email at 22 February and then you describe what you do between the 19th and 22 February, I just want to gauge the amount of work involved in all this stuff that you list at the bottom of the page. How much time did it take you to carry out all these things?

A I can't give you a figure on that, but a substantial amount of time really, particularly the fitness to practice or the Scottish disclosure. I think there were lots of forms to fill in which had to be sent back by post and verified, etc.

Q And these are being sent back to the HR department at NHS Greater Glasgow?

A Yes, and also occupational health. I had to locate original hepatitis B certificates, chickenpox, varicella zoster vaccination, that sort of thing and this is 2019. So the last time I'd had to find those documents was pre-2007 when I took up my appointment in NHS Lanarkshire. So it did involve diving through cabinets to try and find these things.

Q And are we to think from the last two, three lines here that you received a significant number of emails from the Health Board, including a copy of your honorary contract?

A Yes, I did. I can't remember the honorary contract and when I went to look for it I couldn't find

it. So I'm not sure if that ever actually got sent to me.

Q But there was discussion of it?

A Oh, yes, yes.

Q Okay. And when you say payment process, does that involve you giving your bank details to the Health Board?

A I can't remember. I think it might have done, yes.

Q But TrakCare, that's access to the clinical data system?

A Yes, that's right. So, I had all my passwords for the laboratory data-- database and also for TrakCare and for the rest of the hospital.

Q And at this point around about 22 February, when did you think you would be starting?

A I was ready to start the following week.

Q Well, what happened after that?

A I suddenly, out of the blue, received the email from Professor Jones.

Q Can we go to the next page? So, you received an email from Professor Jones I take it?

A Yes.

Q And that's on 28 February. So, before we go on to your response, I'd like to look at the text you have pasted in here. In NHS recruitment and staff work, how quick does it normally take to bring a locum in to do a few sessions? Is that a quick or a slow process?

A Depends how urgent it is. If you're coming up for a bank holiday weekend and you don't have a physician on call, then it can take a matter of hours to get somebody in place, but, generally, I would-- well, a new consultant-- a substantive consultant appointment, it would probably take six months to a year to get someone in post.

Q That's what I was going to ask. So, in terms of your locum post, to get to you-- the point you got to about before you got this email seems to have taken a few weeks. Had NHSGGC been deciding to create a more substantive post, how long would that have taken them, just in-- knowing your experience as a NHS consultant in Scotland? A range of dates perhaps. A range of times.

A Six months maybe. I don't know, I'm afraid. I can't really answer that.

Q And so they explain they don't require your assistance and he apologises and we'll come back to whether he replied at the end, but you

sent an email back to him. Now, what I want to do is to break this down, the reply, and try and understand a couple of things as we go, firstly, why you say what you say and to the extent to which the information that you use to say this has come from Dr Inkster, as opposed to other sources. So the first paragraph, you say, “This is rather shabby treatment, is it not?” What do you mean by, “Clearly the Glasgow boys have put their boot in again”?

A There were other consultant microbiologists based in Glasgow, who I suppose you could say we’ve had history in the past.

Q You and them, as it were?

A Yes, usually over trying to get a particular job or not.

Q I see. The last sentence of that paragraph is effectively you asking Professor Jones if he stuck up for you.

A Yes, because we’d always been on very good terms.

Q Okay. Then you have a sentence-- a paragraph, which says, “I would have made patient safety an absolute priority.” Now, what I’d like to do is to-- You’ve explained your two visits, and you said it wasn’t difficult to get the measure of the Queen Elizabeth or the culture. Now, I’m quite keen to understand how you felt able to say that because it was a short-- two or three short visits. How do you feel you can get the measure of this hospital and its culture in just a couple of visits?

A It might have only been two or three short visits, but it was very, very intense and there had been history. So the history of the culture had been something I’d experienced coming up and working in Glasgow from 1993, ‘94, I think when I first came to Scotland. So the culture wasn’t difficult to understand because of the personalities and individuals involved, but what had actually happened at the new hospital, as somebody like me who’d spent all their time doing research on the environment, that wasn’t difficult to get the measure of either.

Q And so, from the perspective of someone doing research on the environment, what were your particular suspicions or measures that-- what had you formed in your mind as thoughts at that point about what was going on with the hospital environment?

A I was concerned about primarily the water supply and, secondly, the ventilation but also because my own research interest is

on surfaces and cleaning, then I was also very interested to hear about the standard operating practices, frequencies of cleaning and what type of equipment and liquids were being used for cleaning because some of these can have a bearing on the organisms found in a ward. There was also an interest in antimicrobials prescribing and I don't know whether this has been mentioned, but there are particular types of antibiotics that will encourage particular types of organisms. Can I give you an example?

Q Well, I mean, I was going to ask you, before we go on to that, so I can appreciate that antibiotic might discourage some organisms. How might it encourage other ones?

A Oh, very much so, because when you give an antibiotic, it affects not just that patient, but that patient's immediate environment, and sometimes long term as well. Probably one of the best examples I can give you, which is evidenced not by me, but by Dominique Monnet from ECDC, who found and published that if a particular type of carbapenem antibiotic, which is a very strong, broad spectrum carbapenem antibiotic-- we usually use merapenem in Scotland, if there is a sudden spike of antimicrobial consumption of this agent, then two to three weeks later in that unit, you are likely to find a patient with Stenotrophomonas maltophilia, because Stenotrophomonas is naturally resistant to this particular type of antibiotic. I can give you dozens of examples like that.

Q Is that because the other bacteria that aren't, get weeded out and it has a field day, effectively?

A Yes. It's like Clostridium difficile which is an overgrowth of a toxin producing anaerobe in the bowel. If you give a patient an antibiotic for a sore throat, for example, or a wound infection, that antibiotic affects not just the germ causing that infection but a plethora of other germs on your skin, your mucous membranes and in your gut, which means that there are convoluted mucosal planes ready for other organisms to spread over and procreate.

Q Because the other ones were killed off?

A Because the other ones have been killed. So that's one of the causes of Clostridium difficile, which is an extremely nasty gastroenteritis, usually hospital acquired, and it's due to antibiotics.

The same thing happens with surfaces. For example, a strong

disinfectant on a surface will kill the organisms on that surface, but within three hours the surface is repopulated with organisms and some of them are actually a lot nastier than what you try to get rid of in the first place. So, disinfectant stewardship, antimicrobial stewardship, all of these things have bearings on what happens in patients and what happens on the surfaces beside them.

Q Now, before I ask you a couple more questions, I suppose it occurs to me that what you seem to be describing to me is because you've known Dr Inkster and you've helped train her, you get this quite quickly from a quick visit because you-- and we should-- should we just assume that because of your experience you're picking up all this stuff very fast, or are you doing lots of reading and research?

A No, I just knew.

Q Right.

A I just knew. I've done so many sampling studies in hospitals and linked them with antimicrobial prescribing with an infection. I had a clear idea. I felt what was going on. I just didn't know the specific detail, which is what I hoped Theresa would would tell me.

Q Right, and then you mentioned in the middle of this paragraph that you would have engineered a raft of interventions that would have immediately reduced the HAI risk for everyone. Can you give us any examples of what those interventions would have been?

A Well, the first thing to do would have been surveillance, because you can't control what you don't know about. So I would have set up some sort of reporting schedule or at least got access to whatever was being used at that time, so that I could see ward by ward what organisms were coming through and where they were. So that would have been the first thing. The second thing to do would have been to concentrate on most vulnerable patients.

THE CHAIR: Sorry to interrupt. It's just I'm keen to keep up. Now, you used the expression "surveillance".

A Yes.

Q It may be that you're going to, at some point, explain just what you mean but, for my benefit, could you bear in mind that I don't necessarily understand a word like surveillance in this context.

A Okay. It's counting up how many different types of infections there are across the hospital, and trying to ascertain whether they're

hospital-acquired or whether the patient actually had the germ already. So two types of hospital-acquired infection: endogenous, which means the germ has come from the patient's own flora, or exogenous, which means the germ has come from somewhere else to infect the patient. So, first of all, we need to know how many infections there are, if we can, the proportion of endogenous to exogenous, and of those infections which are exogenous, which is something that we should do something about, because it's Infection Prevention and Control, what type of germs are they? Where are they? Are they in the blood? Are they on the surface? What germ is it and what antibiotics are they susceptible to? Because that gives you some idea if there's any cross-infection going on as well.

Q So, this would be an auditing of material which is coming into the microbiological lab in any event?

A Yes.

Q Right. Thank you.

MR MACKINTOSH: So, I think at this point, it's probably worth-- we've had quite a lot of evidence from the Infection Prevention and Control team in the hospital, in terms of its manager, its lead nurse, a number of the nurses, Dr Peters and others, of a system existing within the GGC, RPC, which involved a series of alert triggers linked to their ICNET system around both national reporting microorganisms and also microorganisms of interest at the time to particular patient groups or particular consultants. Now, is what you're describing the same as that or something different?

A No, no, no. I would have tapped into that. When I became a microbiologist at the Scottish Centre for Infection and Environmental Health, the precursor to Health Protection Scotland, I helped set up that national reporting system for all the-- as it was then, 16 health boards across Scotland. So I had a fair idea of what type of data was going to Health Protection Scotland and how that would be siphoned out from the laboratory.

So I would have utilised that and also made sure it was fit for purpose because sometimes there are some organisms which don't appear on it. Other times, there are organisms which appear on it which shouldn't be on it. So I would have checked the surveillance system and taken the data to show me where to go first and what things to do first.

Q Is it a bit of a leap to think that, in a sense, they weren't doing this already?

A Well, as I said, I don't think I knew any more than what the resident experts, microbiology consultants knew at the QE at the time. The difference was, coming in from outside, I might have been able to move the changes required along a little quicker.

Q You mentioned microorganisms that they should have been looking for. We've heard the expression used by lots of witnesses of "unusual microorganisms" and I wonder what you-- you could explain what you would understand by that to mean in the context of Infection Prevention and Control.

A When you've been authorising hundreds and hundreds of microbiology reports for years – and I've worked both in district general hospitals and university teaching hospitals – you know when there's an unusual organism because it's something that either you haven't seen for a few years or something that you've never seen.

Q So, the core concept that we should take from unusual is novelty?

A Yes.

Q Is there anything that suggests that unusual has a different meaning depending on what the patient group involved is? Would you think unusual in a general ward is different from unusual in a haemato-oncology ward, or is it all the same, it's just unusual?

A You're more likely to find the really unusual organisms in your vulnerable patients because there are millions of bacteria and viruses and other microbes in the environment. Most of us have a functioning immune system, which means when we come into contact with these, whatever they may be, they do not harm us but for somebody who doesn't have a functioning immune system, then an organism from the environment is more likely to cause an infection, and that's more likely to be unusual, something that you don't normally see causing an infection.

Q And so, in your email, you mentioned a raft of interventions. You mention one and we've then asked you questions about it. What was the next one you were going on to mention?

A I would be very keen to have had a look at the water system and to look at what had been done. I know from listening to the Inquiry that

there were point of use filters placed in and that there was tubing removed, etc., etc. I'm particularly interested in dosing water with a biocide. It's not chlorine dioxide which was used. I've done a lot of work on an irrigant called neutral electrolysed water, which is very safe. It's not so toxic. It's safe to put into water. It's safe to put on skin. We use it for wounds, and it is extremely good at-- not sterilising water, because you're never going to be able to sterilise water, but cleaning water up so that the risk is reduced. It also, over time, will get rid of the biofilm.

Q So, in-- Well, that's what I wanted to ask you about, because we've heard a lot of----

THE CHAIR: Just for my notes, I apologise, Mr Mackintosh, you mentioned this product, or-- Could you just give it to me again?

A Neutral electrolysed water.

Q Right.

A So, it's water from the mains with some added salt and you pass an electric current through it. It's cheap and it's very effective. It's microbiocidal and Health Protection Scotland have been looking at it as a disinfectant. We've been using it as an irrigant after some Japanese work showing that it was safe to use on skin and finding anecdotally that it reduces bioburden in wounds and helps heal them up quicker but you can also add it to water, water reservoirs, going through sinks, etc., etc., and it cleans up the water and it dissolves biofilm. There's no published evidence on that just at the moment.

Q Neutralised, did you say, electrolyte?

A Electrolysed water.

Q Electrolysed?

A Yes.

Q Thank you.

MR MACKINTOSH: Again, I mean, at this point, this is February 2019, so we've heard evidence that by this point, the Health Board have fitted a chlorine dioxide system. Point of use filters have been in place in the higher risk wards, including both haemato-oncology units, for nearly a year by this point. Why would you think at this point that biofilm would still be an issue?

A I got the impression that infections were still occurring. So, despite all the measures that have been taken so far, there were still infections occurring. So, what I would have done at that point in time is gone and sampled and you have to take a lot of samples because microbes are

very small.

Q So, we've heard evidence from Health Board witnesses that a lot of samples were being taken at this point and over time the number of out of specification samples reduced until now it's very, very low. Looking again back to February 2019, it would be put to you, I think, if you said you need to do all these steps with the water, that the rate of infections might well have been no worse than they were in the Yorkhill hospital. I'm not asking you whether that's true because clearly you don't know, but is that a valid analogy or a valid point to make in a discussion about whether there's an outbreak?

A If you find an organism in the water and an organism from a sterile place in a patient, for example, a blood culture or an aspirate, and you genotype them and they have identical genotypes, then you know you've got a problem with the water.

Q What happens if you find a species in the patient and you find a species in the water and you genotype them and they're not identical? In fact, they're some distance apart in terms of the genotype. What does that tell you?

A It's-- There's still a risk.

Q Why?

A It's a risk because if you're hosting-- if a water system is hosting Pseudomonas, Stenotrophomonas, Cupriavidus, whatever, Klebsiella even, and a patient in the vicinity, within that time frame has an infection with a similar organism, even if it's not the same species even, then you will be suspicious and you'll carry on with your sampling.

So, we've had this problem in our own intensive care unit, in the hospital in which I work, where we had Stenotrophomonas. We had at least five or six patients, one death. So we swapped all the sink drains of all the water outlets in the intensive care unit. We found hundreds of different types of what's called Pseudomonads. So these are all related gram-negative organisms of which Stenotrophomonas is one. We were very lucky because when we sent them all the way from typing, we got an identical genotype of Stenotrophomonas from the drain and from the patient that died.

Q So, you could make the connection.

A That's all I needed to convince management to then implement a raft of changes for how we were managing the water in our intensive care unit.

Q So, given that you've raised this example, if you don't-- if you find, as it were, lots of material in the drains and you take lots of samples and you have samples in patients and the scenario is exactly the same as the one you've described, except you don't have the direct link between one of the samples and one of the patients, do you exclude this environmental link or do you still look for an environmental link?

A No, no, no. You carry on looking. You carry-- You don't give up until you find where that's coming from.

Q I'm going to assume that a raft of interventions is more than two interventions. So are there any more interventions you had in mind at this stage?

A Yes, I would like to have examined the ventilation. I would have liked to have known, was it 100 per cent fresh air that was being used for the ventilation system? Was it mixed air? Was it recycled? I'm not a ventilation engineer but I do know that there are different types of ventilation. I would have also liked to have known is every floor separate with its own, like, mini-ventilation system or are there some floors which are linked?

Q So, you had a series of questions in mind?

A Yes.

Q But you had no particular plan, as it were?

A I think----

Q Apart from the windows?

A -- probably the plan would have been-- it would have been to suggest to Estates that we increase the proportion of fresh air in the ventilation system. That would have been the first thing.

Q But you'd have had to find out what it was before you did that----

A Yes. Yes.

Q -- right? Well, I'll move on then. So, the----

THE CHAIR: If we're moving on, it's just to understand your answer. Now, counsel put to you the proposition that you can't really be confident or you can't even know if there's a link between a microorganism you find in a drain or wherever and an infection unless, as a result of genotyping, you find identical traits.

A Identical----

Q Now, he put that----

A -- DNAs. The sequence of amino acids, the----

Q Yes.

A Yes, the DNA sequence.

Q Although I don't pretend to understand the detail, what we're talking about is not at the level of genus, not at the level of species, but at a much lower degree or much higher degree of granularity.

A Yes. Very much so, but there is also-- you can also move in the other direction as well. For example, if you suddenly find you've got three patients with a particular germ in a ward, all coming up within a couple of days, it's a Friday, it's before a bank holiday weekend, and this is a classic, what you do is you plate out those organisms on different types of agar in the microbiology laboratory, and on one of them, you will put some antibiotic disks, and you will incubate them overnight and then look at them the next morning. If morphologically, so that's the size and the shape and the colour and the smell of the organism, if those are identical from your eye and if you measure the zones around the antibiotic disk, those are identical between all the three isolates that you're checking, you've got an outbreak, and that you can do straight away. If you want to do the genotyping, which is the gold standard, you have to send those isolates away to a reference facility and you might be waiting a few days for the results but when you've got potentially an outbreak burgeoning immediately, there are things you can do.

Q Right. I just wonder if that-- I mean, I-- That's useful information. I wonder if it really addresses the question which I maybe didn't put very well. Can I pick you up on part of the answer you previously gave, which is you don't give up until you find, and the way I've noted it, you may not have used this word, the source.

Now, I was wondering whether that was, in fact, accepting the proposition that counsel had put to you that if a particular source actually-- or in order to come to a conclusion as to whether a particular source is associated with a particular infection, you do have to find an exact coincidence of traits. Now, I would distinguish that from what you might do as a matter of prevention or taking mitigation, and I have in mind your example of finding three similar sources of infection on a Friday and what you might do and what you might conclude provisionally but I'm just interested-- and I'm conscious that maybe I'm not putting this question very well. I'm just interested in whether you, in fact, were accepting the proposition that counsel asked you

to consider, which is you can't, as a scientist, conclude that a particular source is associated with a particular infection unless you carry out genotyping.

A That's the rubber stamp, and that's the evidence that you should always seek to obtain if you want to get the managers on your side and get things put in position and changed, because it's very difficult otherwise. Infection control is a very young science. We only started in 1959. We do not have the equations and the evidence that some of the other specialties have and, therefore, a lot of what we do in the name of Infection Prevention and Control is common sense, which does turn into evidence. You just have to wait for it.

But, in the meantime, when you're faced with managers who are desperate to reduce costs in a hospital and you want to close a ward because you think you have an outbreak and there are 16 people in Casualty waiting for beds, you have to have enough scientific evidence to be able to convince the managers that what you're saying is correct. So, when you've got something happening in a hospital and you know it's not right and you know there's an infection control deficit somewhere, then to get the managers to help you put it right, you need to find the evidence, and Teresa knows and has known for a long time and many years that that's what I'm particularly good at.

Q I'm conscious that I may have taken us in a direction which is not necessarily appropriate with this particular witness. I'll hand back over to you, Mr Mackintosh. I'm not-- I have to say, I'm not just entirely sure where I've got us to.

MR MACKINTOSH: So, I want to just clarify. We got onto this because we were discussing the interventions that you had in mind, and then we were discussing how you would go about looking at samples and how you would analyse them, and suppose what I'll just do, I'll wrap this up by asking a series of quite tightly phrased questions to see if we can make sure we understand each other.

So, if you have an infection in a patient of a particular species, and you carry out a series of sampling around the ward and you find the same species or similar species, whether it's on a Friday night or not, you would continue to investigate and you would take precautionary steps. Have I got that right?

A Yes.

Q Yes. If you then carried

out, more slowly, a whole genome sequencing exercise and you exactly matched the sample taken from the patient with one of something in one of the samples taken in the ward, you would know there was a certain connection. Is that right?

A Yes.

Q Yes. If, on the other hand, you carried out that whole genome sequencing exercise and there was not a very, very close connection between the genes of the samples and the genes in the patient sample, what would that tell you?

A As a microbiologist, you know when organisms are related and function the same way, so you know what the components of wet dirt are, you know what's in dry dirt, you know what's in the air, you know what infects patients. When you find a specific organism in a patient and you fail to find that identical organism in the environment, but you find similar within these broad categories, then you can either give up at that point and say, "Well, it's possible that there is a link to the environment", or you can continue sampling until you find what you're looking for.

A long time ago when I was a junior doctor, there was an outbreak of Bacillus, which is in the air, and this was infecting patients in Intensive Care and Special Care Baby Unit and immuno-suppressed wards, and it was a London teaching hospital, and it was caused by drilling the earth, a building site right beside the hospital because there was going to be a new linear accelerator unit, and there were clouds of soil coming up, tiny particles of dirt which were feeding into the external air filters on the top of the building and then sown into the wards. And I was charged with finding what the source of this organism was and how to stop it, and to prove the transmission.

In actual fact, there was a complication because we were also finding Bacillus all over the clean linen in the laundry, which was behind the hospital. It was a very hot summer.

At that time, there was no access to wholesale genomic sequencing, so-- but we did have another type of typing, and that was called flagella typing. So this particular organism has a tail, if you like, with specific antigens on it, and there was a reference facility in London at Colindale which typed all the oscillates that I managed to find, both from the building site itself, settled plates within different wards in the hospital, and from the laundry, the press plates on the sheets, and they did the flagella typing for me. And

because we kept on sending the samples, eventually we got the identical flagella type between what was in the patients and what was in the building site, and we found it duplicated on the sheets in the laundry, the clean sheets in the laundry.

Q So----

A So-- But it was an extended outbreak over about three to four months, one very hot summer in London at a London teaching hospital, and it was only by continuing to sample and send everything we got for typing that we managed to find the link. That would be criticised nowadays because it wasn't wholesale genomic typing, but for our purposes, at that point in time, the organism were identical between patients and the environmental source, and we were able to put the necessary precautions in.

Q And so, in effect, have I got it, that if you don't find an identical or very, very close type link between the patient and the environment, what you should do is keep looking until you find it?

A Yes.

Q Thank you. Now, what I want to do is to look at the next paragraph, just the first sentence of

the email, because you've said there are serious environmental deficiencies at the hospital. Now, to some extent, you've covered this already, so I'm really looking for what, simply in terms of, not why you think these are issues, but simply what the issues were as headings. So what were these serious environmental deficiencies that you saw at the time, in your mind?

A I think the main one that I remember was the appearance of the plantroom where the water tanks were, the water reservoirs. I can't remember how many tanks there were in the particular plantroom that Dr Inkster took me to, but I was appalled at what was floating on the top of these water reservoirs, which were going to-- obviously, going to be sent round the entire hospital, but also the state of the environment in the plant room itself. There was debris and dirt and litter all over the floor, and evidence of pests as well.

I felt that that led me to ask what the standard operating procedures were for cleaning and decontamination of plantrooms, not just the patient wards, but the rooms where Estates-- the areas where Estates have all the equipment for ventilation and water.

Q Thank you. Now, later on in the email sequence, you contact

Mr Hamill and you explain that it's not happening, you're not going, and in it you identify a particular professor as having some role in deciding you not to come. I'm keen to understand, at this stage, without naming him, where you got that information from, because it's not in Professor Jones' email and I'm assuming you didn't receive an email from him saying what you-- the motivation you ascribe to him. So how did you find out that he was involved?

A I suspect it was Dr Inkster who told me, but it could have actually been another couple of people who'd given me the inside gossip on why my services were no longer required.

Q All right. Well, we'll talk to Dr Inkster about that. So we'll ask Dr Inkster about that. What I want to do then now is to-- you explained-- We can take this off the screen. You explained that you had actually got a reply from Professor Jones.

A Yes.

Q Now, I haven't seen it, and I'd like to maintain a little rule of not putting things on-- leaving it as evidence without knowing what they are first. In general terms, does he give an explanation for the decision not to?

A Indirectly, and it's

absolutely fine for me to read it out.

Q Well, maybe the thing to do is, at this stage-- Have you got a hard copy there?

A I just wrote it down, but I've got my laptop with me and I can actually forward it to you when you're ready.

Q Well, maybe if you just pass the piece of paper to my assistant here, I'll have a little look at it before we ask you to read it out. So, what I'm going to ask you to do is two things. One is, I think it would be helpful when you get back to your office if you could send us a copy of that reply. In fact, all the emails in the thread will, I think, be useful. Would you just read out the second paragraph of Professor Jones' response?

A Yes. Professor Jones said, "These are difficult times indeed, and we are trying to restructure and fund additional resource. Yours sincerely."

Q Thank you. Right. Now, what I wanted to do now is just to see if there is anything-- I just got the slight impression from your statement that you thought there was some connection in this scenario with the paper you'd done for the Parliamentary Committee with these events, and

you've been very happy to talk about it but, at the time, it was published in an anonymised form by the Parliament. Was that at your initiative?

A That was my suggestion to Dr Inkster because I really didn't have anything to lose, but I was concerned about Dr Inkster and her status and her continuing career, and I suggested to her that we anonymise it. It was a discussion between both of us and both of us agreed that that's what we should do.

Q And if we go back to that document, which is bundle 14, volume 2, document 124, page 419. Now, we can read this document and if we just step through it to the third page, I think it is, sorry, the second page. Do you see how there's a list here, a bullet point list, and then there is-- There's more details. Basically, within this paper, there is a list of terrible things that have happened. Am I right in thinking that not all of these things happened at Dr Inkster's hospital, they happened at lots of different hospitals throughout Scotland?

A These were the incidents that Teresa put forward, but you are right in asking about whether they happen in other hospitals. They do.

Q So, it's a mixture of stuff that happened at the Queen Elizabeth that she's told you about, plus stuff that's happened elsewhere.

A I think most of these actually happened at the Queen Elizabeth.

Q But you wouldn't know that. That will be her who knows that.

A That was her, yes.

Q Right.

A Most of this document was put together by her, and I edited it and put in the references and other additional points but the bulk of it was was produced by Teresa, because she obviously wanted to make a note of what was going on at the QE at the time.

Q All right. We'll take it off the screen please. So I, my Lord, have no more questions for Professor Dancer, but it may be that my colleagues in the room have questions they would like me to ask. I wonder if we might have a short break for me to check, and there are some people joining remotely today as well.

THE CHAIR: Yes. Professor Dancer, as counsel has explained, I need to know whether-- and he needs to know whether there are other questions in the room, and when I say in the room, I'm including those who are following us remotely. So, what I'll ask is that you return to the witness

room for what might be-- what should be no more than 10 minutes.

THE WITNESS: Okay, thank you.

(Short break)

MR MACKINTOSH: There are no more questions for this witness, my Lord.

THE CHAIR: No more questions. If we could ask Professor Dancer to come back in. There are no more questions for you, Professor Dancer, and you are therefore free to go, but before you go, can I thank you for your attendance this afternoon and also for the preparation of your witness statement, which together will form part of the evidence to the Inquiry. Thank you very much indeed.

THE WITNESS: You're welcome.

THE CHAIR: Now, Mr Mackintosh, we resume tomorrow?

MR MACKINTOSH: We resume tomorrow with Dr Kennedy at ten o'clock.

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

(Session ends)

15:25