COPE WM Public Zoom webinar 19 November 2021 13:00-14:00

Professor Peymané Adab: Welcome everyone - it's great to have you here, and thank you for joining this webinar. So, I'm just going to start us off just by a short introduction, and a lot of you will hopefully be familiar with the COPE study and I know you'll have participated and helped us with the questionnaires and the various study aspects of this, but just to give you a little bit of a reminder and a background.

I'm sure that everyone is very familiar with the study but I'll start with just that background, like I say, and then we're going to go into a few people who are going to speak to us. So we've got Sarah Berhane who's going to feed back some of the initial survey findings and what we're planning to do with all those questionnaires that you filled in. Chris Poyner is here, who is going to talk to us about the interviews and some of the initial findings, and how we're going to move forward with that, and Alex Richter will speak to us about some of the blood tests - sorry I put timings on some and some others. And finally, what I'd like is a discussion: if for all of us who are here, just to help us to think about who are the people that we need to more widely inform the findings of this study to, so where should the findings go and who are the people who can act on this.

So, many of us will be familiar with these daily graphs that we get, and this is the background to the study, is that we have had increasing cases of COVID, and this is still ongoing. This is data from the UK and the most recent data that I could find from yesterday, showing weekly rolling averages of cases of COVID, and we also know that not only are the cases continuing to happen, but there has been a higher rate of COVID in health care workers. So the risk of infection in health care workers is higher than that seen in the general population, so that there have been a number of studies that show that there's between three and seven times higher risk in healthcare workers.

And this graph is just showing that again here, compared to other essential workers, healthcare workers have been affected more and that healthcare workers and their household members have contributed to a sixth of all hospitalized cases. What we don't know yet and that's partly what this study is about is the extent to which workplace and related risk compares with other risk factors to somebody coming down with COVID, and within the workplace, what are the factors that are contributing the most risk. So the aim of the COPE study is to examine the relative contribution of occupational compared to exposures in non occupational settings on the risk of COVID in healthcare workers and the factors within the workplace that are contributing to high risk and also, more importantly, how can we minimize this for the future.

So, as you probably are aware, the study included a questionnaire, which many of you have completed and a follow up survey four months later. There have been interviews with a sample of some of those who've completed questionnaires, blood

tests, at the dry blood tests that have been sent out, and a sub sample of those who participated are also taking part in our household members sub-study, where we're asking household members of healthcare workers who had a positive antigen results to do some blood tests and fill in the questionnaires. So, that's really just the background, and I will stop sharing. I'm going to move on to invite our first speaker, but before I do Katie is kindly just going to explain some of the housekeeping and how we're going to manage the chats if that's okay.

Katie Youngwood: Hi everyone, thanks for registering to attend the webinar, and it's really great that you're interested in seeing what findings have come up so far. If you have any questions for any of the speakers, you can ask a question in the Q&A button at the bottom, and it's set so if you can view the questions you can comment or vote on people's questions if you see something in there that you think is important or interesting to you. That would be really great. We've got some people here to monitor questions, so if you if you type anything in there, they will raise it to the speaker and answer in the discussion period after the presentation.

Professor Peymané Adab: Thank you very much Katie, that's great. So I'm going to hand over now to Sarah, so please do keep comments and questions in the chat. If we can't answer them in the session, we'll do that later, and Sarah's going to start us off. Thank you. Sarah, you're on mute.

Dr Sarah Berhane: Sorry. I'm on full screen. Can you hear me now? Sorry about this. Hi everybody and I'd like to start by thanking everyone who participated in this study and taking the time from a very busy schedule to fill in this very extensive questionnaire - we're really grateful. In this talk, I would like to start, like to give a brief summary of focus collected and an overview of the system. We have 2643 participants, and this table shows the breakdown of the occupations and there were a range of percentages across the different occupations, but the biggest, the ones with the biggest proportions came from paramedics and nursing staff. Similarly for departmental breakdown, we see that the biggest contributions came from the emergency medical unit, office based and other departments. And we also looked at sex, ethnicity, age and highest qualification breakdown. In this this the participants broadly represented the trust staff, however, it was less success in recruiting staff from ethnic minorities.

And the table on the left, shows the results from the self-reported antigen tests, we see that over 25% of those who are reported as positive. And figure on the right, shows the number of antigen tests over time for each of the negative and positive results. For the negative results, there was a steady increase in the number of tests across in time across different times, however, for the positive test this increase was more like in a stepwise fashion with the with bumps seen at around mid-April and January, coinciding with the pandemic peaks. And, as expected, the rate of positive tests plateaued after February, when vaccination rates increased. And just a reminder of the questionnaire sections: there are eight sections with questions regarding the participants, the COVID 19 infection and testing experience, as well as exposures outside and in the workplace, and other factors like lifestyle habits and home situations and so on.

Now, regards the analysis plan, we would like to investigate the relative importance of the, of certain exposure settings in the in the risk of COVID 19 infection, so the first three listed here relate to settings, occupational settings, related to staff, staff contact, as well as contact with patients with or without suspected COVID, whereas the last four look at non occupational settings such as indoor social gatherings and public transport. We also like, we also look at other factors that may contribute to the risk of COVID 19 infection, and these are like sociodemographics, the home environment, lifestyle and clinical characteristics. For each setting, we also like to examine the role of various occupational and non-occupational exposures, and the corresponding protective measures in the risk of COVID 19 infection. Examples of exposures are, such as COVID 19 patient contact, COVID 19 materials and surfaces, body fluids, aerosol generating procedures, indoor social gatherings and public transport and for each of these exposures, there are reported protective measures, such as face masks, protective gloves, hand hygiene and plastic aprons. And, as you know, the questionnaire derives quite a lot of information.

So, for the purpose of this talk I'm going to focus on the direct contact with suspected or confirmed COVID 19 patients in the two weeks prior to the test, and this will be given as in terms of dose, that is, the number of patients in close contact, duration - at length of close contact, as well as we also look at PPE, specifically single use face mask, disposable apron and gloves. So we have 684 positive results and 1628 negative results and looking at the percentage, these particular percentages, we see that those who were positive had 42% of them had contact, direct contact with, COVID 19 positive patients, whereas this was 23.5% for the negative, self-reported negative tests. Hence those who had positive test were more likely, sorry, those who had positive tests were more likely to provide direct care to patients with COVID 19. Similarly, when looking at the dose, i.e. the number of COVID 19 patients in close contact, we see that, overall, those who were positive in the tests had higher contact, higher number of contacts with COVID 19 patients compared to those with negative tests. Specifically notable in the higher categories, say 5 to 10, to Over 10 where you see that the percentage more than doubles in those who are positive, compared to those are negative. Similarly for duration, that's the maximum time spent close contact with COVID 19 patients and that's also the same message, where those with positive tests have longer close contact with COVID 19 patients compared to those who are negative and this could be so we can see that specifically this is more clear with the 5 to 15, or to Over 15 minutes contact where presentation again nearly double of that into positive compared to the negatives.

We also looked at PPE, whilst providing direct care to COVID 19 patients. We excluded those who did not go to workplace and did not provide direct care to COVID 19 patients. And overall, we see that those who had a positive test were more likely to use face coverings, as demonstrated with percentages here - 68.1% versus 56.4%. Similarly with an apron, you also see a higher percentage of those who report always using apron were in the positive compared to the negatives. And the same with the disposable gloves.

But we are [audio indecipherable] Everyone obviously this is an ongoing analysis and there are other factors we have to take into account for the analysis, like other

factors that may adjust other factors that adjust, as well as well as missing this so yeah, it's still ongoing. I think that's my last slide.

Professor Peymané Adab: Thank you, thanks very much Sarah, that's a nice interesting sort of glimpse to the rich data that's being collected. I wonder if there's been any questions. Anybody want to have any questions before we move on, or any comments? I see that there is a question about the recording being sent round which I'm sorry, it's if you're missing some of this, yes, we will be sending the recording round to those who participated. Okay, thank you, if there's no questions and we can always come back if anyone wants to think about this and has any thoughts later we'll have an opportunity to ask again later, but maybe we can move on to Chris and sort of chat about the qualitative studies.

Emma Lancashire: One question has just popped in, Peymane.

Professor Peymané Adab: Oh apologies. Okay.

Diana Hull: Sorry, so this is Diana, one of the research nurses - and so the mask result is odd, did you ask which type of mask was used?

Dr Sarah Berhane: This just said single use facemask, I think they said a disposable mask. But there are other, other — sorry.

Professor Peymané Adab: Yes. So we've got details on a range of different masks in the workplace, but yes, this is, I think you're right that it looks odd in terms of you'd expect it to be the other way around, but I think it's partly that people with more contact would have been using this equipment more and the next step will be to try and adjust for the different risks and exposure, and protective measures so that we can tease out a little bit about which of those protective measures were more important as well. Sorry, Sarah to talk over you.

Diana Hull: And another question has just come through. So, how do you discriminate between vaccinated and not vaccinated.

Professor Alex Richter: I guess I'll answer that when I get to — That's part of why we're doing the antibody testing and we've also got the data around that. So we've been looking at how we can analyze that going forward, so maybe I can explain that a little bit later.

Diana Hull: Thank you.

Professor Peymané Adab: Okay, if that's, if there's no other questions at the moment, we can move on to Chris.

Dr Chris Poyner: Yeah, okay I'll just share my screen now.

Professor Peymané Adab: Thanks Chris.

Dr Chris Poyner: Okay, and we'll get started. Again, I'd like to echo Sarah's thoughts. Thanks so much for your participation and supporting us this with this study. We're extremely grateful and without you guys obviously it wouldn't be possible so many, many thanks. I've called this a Qualitative Member Check and what that means is, we want to present today to give you a sense of the data we're

collecting is emerging, currently, and we are still collecting data. So the idea here is that we present some initial kind of themes and findings and we want to get a sense check to see what you guys think, so please do leave any comments if what you see rings true with your experience, then please, please leave a note about it or if there's anything different that you think we could be picking up on, about that you've experienced or your colleagues have experienced, and do, do leave that in there as well.

So, to give you a sense of the overall kind of large overarching kind of areas that we've got themes on to present today. So we have infection control process, processes at work so obviously things like PPE and social distancing. And how they were introduced, and whether that was satisfactory or not. Then we have communication and work processes following infection. So that's when you've been infected with COVID, how work dealt with that and how the communication was, and also on return to work as well. Then general experiences of working during the pandemic, the impact on mental health, and there are some thoughts on vaccine rollout and vaccines themselves, okay. So, as I've said, if there's any other areas that we can't capture within these headings - obviously these are broad headings, please do let us know in the chat, anonymously if necessary, that's fine too.

So, to start off on infection control measures and processes of PPE at work. So the first thing here that's come out quite strongly is that at the beginning of the pandemic, so we're going back to the start of 2020 here, infection control was poorly implemented. So a lot of the participants have used words like chaotic, there being no masks to begin with, about not being mandatory - that being quite a controversial thing. With time obviously masks were introduced, later on, but also, no social distancing and not with anyone not really knowing how to deal with infection control in a pandemic, largely because it was unprecedented and that we weren't really prepared, from kind of a national level or a Trust level. So the little comment I've got here is it came a bit too late for the majority, so the idea that infection control was implemented, but it was too late for a lot of people who already had contracted COVID 19.

So, moving on, acceptance of infection control, despite discomfort, extra workload and inconvenience. So the majority of staff I spoke to, and Emma and others who did the interviews spoke to said that they, they were quite happy to wear the PPE and to stick to guidance, despite the fact that it was somewhat inconvenient, that it would add to the workload for example when they're doing extra wiping down work or having to work, walk further due to social distancing and obviously wearing a mask 24/7 isn't the nicest thing to do either, so it was a large acceptance of having to deal with all that and everyone was happy to do so.

Okay, so it was all unknown wasn't it, so the high risk of infection, that was unavoidable to begin with, so this is just highlighting what we talked about already. That because of the unprecedented nature of the pandemic, there was acceptance, that there was going to be a high level of infection and there wasn't as much anger prevalent or tangible in people's narratives as perhaps we may have been expecting, but whereas I think again there's this acceptance that this was something that was

going to be difficult to avoid. And I think there was knowledge from staff, that they were going into environments where they may be infected and that was something that they had to kind of deal with and come to terms with and accept there's an element of sacrifice there for the greater good. Okay. So yes, as I was previously saying, infection control measures were implemented effectively after the initial period. I feel that this quote kind of highlights that quite well so. "When they did then roll it out they were very thorough with what we had to wear and provided it. We've always got enough, I have never heard anyone say we've run out". So this isn't true for every example, but the majority of participants suggested that as time progressed and as the pandemic kind of went forward PPE was much more widely available than it was at the start, despite the fact that perhaps there is one or two instances where that wasn't the case.

Okay, so experiences of communication and work processes following infection. So initially, once someone who reported symptoms to their work or to their line manager, the majority of talked about work being very supportive, so arranging things like PCR testing for them. Obviously adhering to the periods of leave necessary, and ringing up during the periods of isolation, to make sure that people are okay. So overall that was quite good, I think, initially. There was an issue for a minority of staff, where there was like an investigation into their COVID if they had symptoms at work, and there was an outbreak, and that was quite challenging for people, while they were recovering so there was that issue. The area of most dissatisfaction, however, was returning to work. So that was seen as quite challenging by some participants, not all, but some who perhaps were still dealing with fatigue or some longer COVID symptoms felt that perhaps they could have had some things implemented upon return to work to make that return and that transition just a little bit easier. Okay.

So the experience of working during the pandemic, so the first theme here is demand as outstripping capacity. So certainly during the peaks of the pandemic, the majority of staff, certainly patient facing staff, discussed how it was an extremely demanding environment. Not only due to capacity issues, but well because of the volume of patients they were seeing, but also because of staff being on sick leave themselves or because staff had left, so that there's high turnover of staff. And actually at the start the patient groups that they were dealing with were quite traumatic as well and, that being quite difficult to deal with too, and quite demanding. Moving on, restrictions on family visitors as challenging. So the idea was that families couldn't come in, that was causing some difficulties in terms of palliative care and being with people at the end of life, but also in terms of the volumes of phone calls to the to the wards, of that being hard to deal with, and perhaps that not being addressed appropriately by the Trusts. And also peer support is important at work, so yes, staff saying that it was good when they have strong relationships with their colleagues at work, and that was quite a big protective factor for their mental health when they were working during the pandemic.

Morally challenging decisions in the workplace, so this is the idea that at times staff had to make decisions or perhaps break, for example, social distancing guidance or felt they had to do so. Because of how challenging it was working in that

environment and the need to have some empathy with fellow staff members, and that sometimes involved physical contact so, for example, if there had been deaths amongst the staff group or patients that they were caring for. So yes, this idea of okay, so we have to stick to the rules, that at times we make decisions that go against the guidance. Another example is paramedics who may have been rushing to help patients in the community, without the level of PPE or making that decision to put PPE on will go in and help someone. And having to do that, in a split second, that being quite a morally difficult thing to do.

And there was a lot of data on redeployment experiences that range from really positive to quite negative. One thing that was quite prevalent was the idea that there's no choice or knowledge about when they, when staff were going to be redeployed about that being quite difficult. And a lack of flexibility around redeployment as well, so, for example not being able to be redeployed somewhere local to where you live, perhaps and, that being difficult in terms of public transport and there were other examples within that too, but we will have to move on.

So, the Impact on Mental Health. Mental health was reported by the majority of participants as getting worse during the pandemic and even for some who hadn't experienced poor mental health outcomes related to their job before and I think felt quite resilient did say that they thought their mental health declined somewhat. One of the reasons for this was the uncertainty that the pandemic created. And there's various layers to this so, for example, there's the uncertainty around getting COVID, am I going to get COVID or not, and if you do get COVID, the uncertainty of your health outcomes related to that. Is it going to be serious, am I going to be hospitalized, will I have long term fatigue? These kinds of things play on people's minds and affect their mental health. And also there's the uncertainty about how long COVID and the pandemic was going to last for, and that being quite mentally tough to deal with, there being no end date in sight for this, for this period of time that we've all been going through. Another issue related to mental health was coping mechanisms being disabled by the lockdown context, so the idea that staff were going home after a really difficult day and not being able to escape in the way they normally would during the, during times previous to the pandemic. So some examples were you know, going to meet up with friends, go to the cinema, taking annual leave, really effectively, these kind of things were all disabled. Seeing family and friends, seeing family as well as friends, and so that was a big drain, I think, and something that came across both in terms of patient-facing staff but also admin staff and people in corporate staff, in call centres and such.

And finally, I just want to touch on working from home. So obviously working from home, seems like a protective thing but actually what we've been finding in the interviews is that to an extent some participants felt that was quite difficult for their mental health. And I again I think part of this is to do with the lockdown context as well, because if you're working from home and obviously you're having that issue of not be able to do the things that you'd normally do to cope, but you aren't going in to work either, so there's no change in environments at all, and you're not engaging with your colleagues at a human to human contact, which was very minimal. But there was also this idea of guilt of not being able to go in and help, for those who are

vulnerable and were shielding, that they really struggled to come to terms with. Oh sorry I will go back.

Yes, so I also just wanted to touch on vaccine perspectives, before we end. So the majority of staff were very pro vaccination and didn't have any hesitancy related to it. So yeah this is quite, "My views on the vaccine? I am telling everybody to go and have the vaccine", that was quite common response, there was there was no anti vax kind of sentiments really but there was some vaccine hesitancy for various reasons, to which I've highlighted here. So one was a concern that it wasn't a well-researched vaccine, and that the vaccine had been developed quite quickly, and another one was like a principal aspect, where it was a case of being concerned that it wasn't, they didn't, staff, some staff didn't feel that it was their decision to get the vaccine, and that created a little bit of hesitancy as well. Okay.

So that's all that I have to share today, in terms of the qualitative findings. There are, there's a myriad of other evidence to this, but I just want to highlight some of the key things today. Thanks very much for your time and attention.

Professor Peymané Adab: Thank you very much, Chris. So again, as Chris said, just to reiterate this is still preliminary and we're still collecting data so some of this may change, but if anyone has any comments, particularly any areas where you think we don't seem to have picked up on, you're surprised that we haven't touched on, we really be grateful for you sharing those thoughts. We'll also potentially be contacting a number of people who, to see whether we can gather a group to have a discussion about these findings, so you may well hear from us just to ask. So, a discussion to help us to shape the findings, in a way that can help us to find actions. What should we do about them and who are the people we need to talk to, to make sure some of these findings don't just stay as interesting data, but move to something that we can do something about. So again, you may hear from us to invite you to take part in that. Any questions, Di?

Diana Hull: And so there's no question from the audience, but we actually have a question ourselves to Chris, if that's okay?

Dr Chris Poyner: Yes, shoot.

Diana Hull: Thanks Chris for a great presentation. My question would be that did you compare the themes based in a workplace, for example Ambulance service compared to hospital, or ITU compared to wards? Were there any differences in there?

Dr Chris Poyner: Yes, so I think the main, the main difference would be whether staff are patient facing or not, that seems to have really impacted the experience. Obvious reasons, in terms of the kind of risk of infection was a lot higher, perceived to be a lot higher for those who are patient facing and that and of workload, especially for kind of the guess like quote, unquote frontline staff, which was really quite strong as well. I think, with some of the administration staff, the lack of contact with colleagues was difficult, both in terms of on site, if there was social distancing, but a lot of the admin staff were also sent home, to work from home for the majority of the week, if not entirely, and that was quite strenuous, particularly for those living

in more cramped social housing. So those with kind of outdoor environments available to them, like gardens and such, so they actually did talk about how great it was that we had good weather during that first lockdown in 2020, and that being a real protective factor for their mental health, and then you know the minority of staff I spoke to were working from home all the time, living in flats and stuff, so that was really tough. So, they're some of the kind of differences.

Just one of the difficulties with it, though, is because we have, we've got I think about 40 interviews done so far, it's quite a small amount to start kind of dissecting it into smaller groups. So you've got five Paramedics here and five nurses here, five Call Centre workers here, so what we try and do is look at what what's common across the data set. But also, of course, teasing out some of those real key differences in that I've just discussed.

Diana Hull: Thank you. The next question is, did anyone comment about issues where they felt like they were being bullied, or that their grade was reduced because they were no longer able to do the jobs that they were employed to do?

Dr Chris Poyner: Ah that's an interesting question, thanks. Not explicitly, but there was concern around redeployment, and there was concern about how redeployment might impact career progress and prospects. One issue with that was line management, so not having clear pathways to line management, or line management not being clear enough, and what, if you have been redeployed for like 18 months or a year in a completely different field, how's that going to impact my career prospects in the field that I'm a specialist in. I think they were some of the concerns that staff had, in relation to your future salary, for example, future job prospects and career prospects. In terms of bullying, there was the issue I discussed in terms of return, when staff got COVID in the workplace and there being an investigation into that. That was seen as quite stigmatizing, and quite challenging at a time where people were recovering from illness. So that might be something that when we look at the recommendations coming out of the research, we might try and think about you know how can we best relay that information on to people in charge, and how can they perhaps deal with those issues in a little bit of a better way. So [audio indecipherable].

Diana Hull: The financial cost, because some nurses, for instance, might do unsociable hours and if they have to now not, no longer do any patient facing duties, then did anyone mention that they had their income was suddenly compromised.

Dr Chris Poyner: No, that's not come out in the interviews at all, so it may just be the people we've spoken see. But I'm fairly sure that hasn't come out, certainly prevalently within the written data.

Diana Hull: Thank you. We don't have no more questions, so that's it from us.

Dr Chris Poyner: Thank you.

Professor Peymané Adab: Thanks very much, that's excellent. Again, a reminder that if anyone does think of any questions or wants any comments, please do use the Q&A and the chat, and we'll record those. Thanks very much Chris for that. If

there aren't any questions, then we'll move on to Alex then, to talk to us about some of the blood test results. Thanks.

Professor Alex Richter: Thank you Peymane, and yeah, thank you Chris and Sarah. I mean certainly those were some very powerful testimonies that we've just heard. I'm very mindful of the fact that this hasn't finished, and that these are ongoing experiences that all our staff are dealing with.

So my role in the project has largely been around the antibody testing, and you will remember that you've all been doing these little dried blood spots, like the heel prick tests in the Community, and I just wanted to show you how we've been using them and why we've done them, and then how we're going to use them with the other information to do our analysis as we go forward. So, why bother measuring antibodies? You know, Sarah's just mentioned that we've done what's sometimes called the antigen test, sometimes it's called sometimes it's PCR, sometimes it's a lateral flow, but it is some way of detecting live virus and that someone is unwell at the time. Now, what I do is measure antibodies and what antibodies measure is that you've had some kind of immune response to this virus and that can either be to the live virus, or, more recently, it can be due to the vaccination.

So what antibodies tell me is they can determine who has and who hasn't suffered from COVID infection or vaccination. Now this is really, really important, especially when we set up the study, because very many of you had infections early in the pandemic. And those that had early infections, there was no access to PCR testing. And so the only way of determining, working out how many of you had had infections, for the first few months was retrospectively using antibody testing. And the other thing that we found out about, you know by about kind of what May, June, we were working this out, just the sheer rate of asymptomatic infection. And, of course, if you're well and we're not screening for infection like we are now with the lateral flows, we don't know who's had it and who hasn't had it, and so the only way of picking that up was with antibody testing.

And actually, these graphs I show you here show in the first part of the pandemic, the number of cases of COVID were really low compared to deaths, and that just tells us that that we weren't doing enough PCR tests, so we have don't have enough PCR cases. It was much better in last Winter's wave because we had PCR testing up and running. So you can see that there's a much better match between the number of cases and deaths, and then really interestingly going through to the summer - it hasn't quite gone through to the autumn - but we've got again high numbers of cases, but much lower numbers of deaths, and that's obviously because of vaccination.

So actually in terms of detecting who has and hasn't had COVID, an antibody test is overall much more sensitive than an antigen or a PCR test. So, some of you will remember these swabs, these spots. And why did we do it like this? Well, to be able to bleed you all in hospitals, you know, take you away from the workplace, arrange a time, arrange more PPE, we felt the best way of doing this was allow you to self-sample and get the sample to us. And, we'd already done all the work in the background to show that it doesn't matter whether we do your COVID antibody

testing by dried blood spot, or we do it as a blood tests - we get virtually exactly the same results. So we're really happy and confident that we're getting a good result on this. And the assay, the test that we've done the COVID antibody tests on, is a really, really sensitive assay, which is why some of you have had a few questions during the study as to you know, why was my health care worker test different, why was that negative if I did that in hospital, but it was positive on your test. Our test was designed to detect asymptomatic, and individuals that had had mild infection. So what we were really working on was that bottom end of sensitivity and because, for this study COPE, we were looking at - largely - individuals who had had mild disease, we wanted to use this really highly sensitive assay for detecting antibodies.

So now, I just wanted to show you a little bit about how we can use antibody results in the analysis, and just a few very preliminary observations. So what we've done is looked at our antibody rates, either pre-vaccination, which started second, third week of December 2020. And then, after vaccination and our individuals that were recruited. So the COPE study you know covers that pre- and that post- vaccination period. And this is something we will be considering in the analysis. So there are two ways we can identify, this one is because you thankfully all filled in your questionnaires and you've told us about vaccination. But also we can look at your antibody rates compared to what antigen testing or PCR testing you've had done, or your self-reported symptoms of COVID, so we can tease all this out. So what you can see, is prior to vaccination, it's about 46% of all our participants had been to COVID, been exposed to COVID, and this is COVID natural infection. So this is most likely to have been to the original Wuhan strain, and then the Kent - or the Alpha strain - last autumn. And this is much, much higher than the general population. You know, which rates at this point would be running at about maybe less than 5% of the whole total population, so we already know that our rates are much higher and we've shown this before.

And then what's really exciting to see is that from December 2020 to April and then May 2021, antibody rates - which are our best marker of who's likely to have the best protection against COVID - goes from 46% to over 98%, which is just absolutely fantastic. Now, unfortunately, just because you have antibodies, it doesn't mean that you are definitely protected against COVID. We know that the vaccines, both Pfizer and AZ have much reduced protection against Delta, and that's why we've all been offered the booster this autumn, and that's why we still wear our masks and that PPE is still all appropriate in the hospital environment. So we will continue to monitor that.

What I was interested in a little bit was antibody rates pre and post vaccination. And so we split up the data, according to this pre-vaccination period, and this post-vaccination period, just to have a quick look see. We could do some of the in-depth analysis to try and bring these groups together more clearly. And I can see that there is a group in the post vaccine period where individuals are seronegative, and that means that they don't have antibodies. So what I didn't know was whether that was because not all our healthcare workers responded well to vaccination - is there a problem in some individuals with responding to vaccine? Or is it just because they haven't been vaccinated.

So I was then able to go back to your questionnaire data and we were able to look in general at the total number of vaccine rates in our healthcare workers. And you can see at recruitment, 84% of our healthcare workers had had two vaccinate, vaccines so we're essentially fully vaccinated, and we had 9% that had had only one dose at this point. And then there were 7% that were unvaccinated. So the take home message for this, is that if you've been vaccinated you were highly, highly likely to have produced antibodies against the vaccine. Unfortunately, that doesn't you know necessarily stand true for protection against Delta, but that's why that top up dose and getting boosting those antibody levels as high as possible was so important.

And then, how can we then integrate what we know about testing, so what we know about your antibody status, we can then work out whether you've had infection or not. We can then look to see how this influence, this information has been influenced by some of your occupational factors that Sarah has spoken about. And we looked at this a little bit in a study that we did prior to COPE, and this kind of informed our COPE study. This was a study we did at UHB right back at the beginning in April of 2020, and it was there that we were able to detect that healthcare workers had such a high rate of infection. But intriguingly - and we will tease this out in our analysis - we assumed, it was our intensive care staff that would be at the highest rates of infection. But actually it was our housekeepers, and our porters and those that potentially were seeing patients with COVID, but without the higher levels of PPE that our ITU staff were using.

So what we, those original findings, we can now look at what's being found in the literature and look at our testing. And then look at all the factors that you've responded to in the questionnaire to really understand who is at risk, but then also how our PPE measures are able to protect us in different environments, from contracting COVID. So I'll leave it there.

It's only a very, very initial introduction as we've all said, but I just wanted to show you how we're going to use those blood tests which you've all suffered for, you've all given me that little bit of capillary blood test, and I know it's not particularly nice, so thank you all for sticking with it and doing it. But it enables us to really get the best out of the information in this study to hopefully feed back, you know, not just to our hospital Trust that we work at, but you know we're tasked with you know, informing policy makers about what should happen with the results from COPE. Thank you very much, back to you Peymane.

Professor Peymané Adab: Thank you so much Alex. That was really interesting. And I see that we've got quite a few questions, so I'll pass over to Kulli and Di if that's okay.

Diana Hull: Thank you. So, thanks Alex, great presentation. Some of the questions I think she answered already, based on whether we discriminate between being vaccinated and being not vaccinated and one question that has come in, is that somebody hadn't received antibody test, along with some other colleagues during the study and was wondering why, why was this? Is there anything we can answer through this webinar?

Emma Lancashire: So it could be, if they took part as what we're calling an asymptomatic patient, then they were only people who reported positive antigen tests were sent the dry blood spot, and that was in the participant information sheet. But we've definitely had some emails into the email inbox, and that's been the explanation so that's possible. If that isn't the case, then, if they want to send an email to us, we can look into that, that's COPE-WM. We can write it in the chat (cope-wm@contacts.bham.ac.uk). Yeah, we'll write it in the chat and it will be circulated after the webinar, so if anyone's still uncertain then do send an individual email and we can look into it.

Professor Alex Richter: And that's really helpful. We are trying to keep track of everyone we expect to have given us the results, but, of course, some people forget to bring, send back their samples so sometimes it's difficult to know. So if you have sent a sample and you haven't got your result back, please do let us know, and we will try and get it to you. There is the possibility that it got lost in the post, and so we can always send another test out to you. But Emma is on top of all of this, and she, you know we work closely together on this.

Diana Hull: Thank you. Another question: are you picking up any reinfections?

Professor Alex Richter: That's a good question Diana. In this study, that's not part of the main aims of the study. But we've got other studies going on which are looking at this, and we've just been funded by the UKRI, which funded COPE as well, because they know that we've done this project. And what we, we are opening a study called VIBRANT. And this will be open for anyone been involved in SIREN or in any of the other healthcare worker studies like COPE. And if you've had a reinfection, and you've been picked up through that study you will be invited to VIBRANT. And we're looking particularly, we're only looking at healthcare workers. And because we realize that you are a very special group of individuals in the country, because you are at higher risk of exposure which we've proven in a number of studies. So I think, unfortunately, the government thinks that we're a bit like the canaries in the mine. What's going to happen to us is probably going to happen, you know, to the general population. So look out for VIBRANT, and I'll be tweeting about it as well as we go forward. And you know, a number of your Trusts, all the Trusts they've contributed, most of them are linked into either the COCO study or to SIREN, so we should be able to get you involved in that with reinfections as well, and why that's happening.

Diana Hull: Yeah, thank you. Another question from Adrian. “I only had lack of smell and taste in April 2020, and wasn't eligible for testing. How many people were not isolating because unable to test?”

Professor Alex Richter: Oh, it's difficult to know, but Adrian, you know you've hit the nail on the head of you know, asymptomatic infection or a lack of testing. And we certainly know it was really chaotic at the beginning, in that first wave of the pandemic. And there was just not enough resource for testing. I remember spending the whole of that first Easter weekend setting up a laboratory with Andrew Beggs here, to enable staff testing at UHB. And then we expanded the Government's testing program, and we ran a Community testing laboratory here at the at the

University of Birmingham as well. So this, but now obviously we've got these massive Lighthouse labs in Milton Keynes, so the capacity in the UK has grown enormously. I have to say, I never expected we would need to be doing, you know the test, you know 50,000 positive tests, you know. We're somewhere between 35 and 50 at the moment, every day, for a month, so the sheer quantity of testing, and the logistics and the organization to administer, that is just absolutely enormous. And, unfortunately, that was lacking at the beginning. We saw what happened in the nursing homes as a direct result of that. We certainly know in our hospital Trust there was a significant inter-hospital transmission, so from patient to patient, staff to patient, patient to staff - that was all very real.

Diana Hull: This is a clarification question. I didn't quite follow the point about people not showing antibodies after vaccination, and whether that was people not getting vaccinated or that for some people, the vaccines weren't effective.

Professor Alex Richter: Yeah, no, that's really easy to answer - it was mostly that there are some individuals that have chosen not to get vaccinated yet. And what we found in a number of studies, not just COPE, but in the COCO study and the other healthcare worker rates. And you know, it's kind of in 98 to 99% of people respond to vaccination. It is, it is the most fantastically immunogenic vaccine that I've seen in my lifetime. You know, it's you know, flu is somewhere around 50%, 60%. This is a really powerful vaccine, but unfortunately hasn't lasted so long so four to five, six months we need this booster.

Diana Hull: Next question: any thoughts on the timeline of antibodies from infection, or vaccine, or both.

Professor Alex Richter: Ah, I've got quite a lot invested in this actually, and we've been monitoring a number of cohorts over time. So it's six months following natural infection, two thirds of healthcare workers have held on to their antibodies so quite a good number, but obviously that's not everybody and that's following natural infection. What we see post vaccination, is that the amount of antibody you produce post vaccination is much higher than post natural infection, so you got it, you start from a higher point. So yes, you will get waning antibodies but you don't kind of wane to below that point as far. So it's a much smaller percentage that aren't, that don't have antibodies - but remember all these antibodies are designed to pick up immunity to the Wuhan strain. And we've got a number of studies showing that cross protection against Delta is significantly lower, especially at six months. So yes, certainly follow the Government advice. The JCVI are asking us for all our data all the time, as to you know, what we're finding, and they are feeding that back in live. I think we hadn't anticipated that the vaccines would wane so dramatically, but there is a real hope that actually it's a dosing thing, and so waning after the third dose, so that booster dose, may well be slower. Watch this space.

Professor Peymané Adab: I'm going to just jut in if I may. Thank you Alex, I think that's generated lots of discussion and I think we could probably carry on, but - and I'm happy to allow some more questions - but could I ask, whilst you're doing that, just if I could invite people to please type in any comments, and I'll go back to Alex to answer any final questions. But what we'd really like to know from all of you, is what,

who do you think we should target with the findings from the COPE study? So, at the moment, we've identified a list of people that we will send a summary of our findings to - so yourselves as participants, the managers in the Trusts, Unions, HR, hospital occupational health and infection control. But if anyone has any thoughts on people missed from this list, who also should be targeted for any information, please type in. I'll go back to any final questions for Alex and then we'll stop. I know we've got only a couple of minutes, but what I'm really happy to do is, if someone can save the chat?

Professor Peymané Adab: We'll do that.

Professor Alex Richter: We can respond, why don't we circulate so I can give it, you know a bit of time - I'm just realizing we've got two minutes to go.

Emma Lancashire: Yeah, that was the plan Alex, that we'll try and respond, you know outside this meeting for anything that was not dealt with during.

Professor Alex Richter: Brilliant. And I see that somebody has said, how will the results change, be used and how will it change - so again, please do let us know about any other groups that you think we should make sure know about the findings. And we will be inviting some of you, as I said, to think about actions that we need to target, in actionable points from the qualitative study, from the interviews as well.

Diana Hull: So we've, we've just got a couple more questions quickly to ask. I think there is one question, that is around the aim of what you are trying to get at. [audio indecipherable] recommendations like where are you going to send the results, very active there so, there are idea that are coming from that. The question from a paramedic is, with PPE and being in an ambulance for hours, you know, the compromise for themselves and individuals, you know. Any plans ahead for that? How do you capture the data?

Professor Peymané Adab: Sorry, whether? For whether, they continue to ..?

Diana Hull: So, what, so one of their concerns is the fact they're going to be in PPE with patients in an ambulance for hours on end, and the risk to self and everybody else.

Professor Peymané Adab: Yeah, I guess, I guess, one of the things we hope to be able to pick up from, from the questionnaire is the extent to which PPE helps to protect, or whether there's other things that protect but I don't think we can answer directly, you know how, what advice. Hopefully it will give us some clues as to what are the most important, to what extent does PPE, or different types of PPE protect.

Diana Hull: Then, how do you share with patients, because we know that we can disseminate information to healthcare workers. But patients, it would be useful for patients to know.

Professor Peymané Adab: Really helpful. Thank you. We'll yeah, I think finding patient groups to share this information with is important, thank you. Okay, I think we've come to two o'clock and I really wanted to thank everyone who's participated, really appreciated. Those who will be watching the webinar and are not here, please do send your thoughts and comments through to us as well on the COPE WM email

address, but any thoughts or comments or questions, we will come back to you on it. And with that, I'm going to thank all our speakers, and Emma and Katie who've helped to set this up, and Di and Kulli as well, for helping with fielding questions - really appreciate it.

Emma Lancashire: And I'd just like to add my thanks to Katie who's done the most in terms of organizing it, so thank you very much.

Professor Peymané Adab: We hope to have one more webinar when we've got more final results as well, and we'll be inviting you to that too, so thank you again for coming.