

The logo consists of a dark purple square with the words "SHEKU", "BAYOH", and "INQUIRY" stacked vertically in white, bold, sans-serif capital letters.

**The Sheku Bayoh Public Inquiry**

**Witness Statement**

**Dr John Parkes**

**Taken by** [REDACTED]

**Via MS Teams**

**on 21 December 2022**

**Witness details**

1. My full name is John Parkes. My contact details are known to the Inquiry.
2. I'm a Senior Lecturer in Mental Health Nursing at Coventry University.

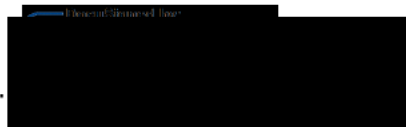
**Professional Background and Qualifications**

3. In terms of my qualifications, I hold a B.A. (Hons) degree in Psychology from the University of Sheffield. I have a master's degree in medical science (M.Med.Sci.) from the University of Sheffield. I have a Doctorate: the PhD was entitled: 'The Safety and Effectiveness of Interventions for Physical Aggression.' This was from Coventry University.
4. My PhD was based on a body of work into restraint safety, some of which most relevant here is we conducted actual research studies where we restrained volunteer participants and measured how well they could breathe whilst being restrained.

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5. I was active in restraint related research from the completion of my PhD until around 2015/2016.
  
6. My professional background is in forensic mental health nursing and I had a 20-year career working in secure mental health facilities, and have extensive practical experience of restraint. My area of expertise is restraint safety including death associated with restraint. I am asked whether I have any experience of restraint by police officers. Not directly, no. My experience relates to restraining people who are severely mentally ill and psychotic in an inpatient mental health setting, and although the restraint strengths are this, the restraint would be very similar and the behaviours of the people is very similar, the limitation would be in that type of setting that people would usually have been searched, so we would know for sure whether or not they had a weapon. The other limitation of the experience would be that we would never have equipment such as batons or incapacitant sprays. I have a substantial, significant familiarity with those items, but it's not something that I've ever used in my own personal experience. My experience would relate to a lot of experience with the manual restraint of people who are severely mentally ill, and in turn, that's why I've limited my report to the aspect of manual restraint. That was what I was asked to do, manual restraint, and I've deliberately not commented on matters where I don't consider myself to be an expert. So I've not commented on the use of handcuffs, batons or the use of incapacitant spray. I would have only a peripheral knowledge of that. I would not consider myself to be an expert on those police-only techniques.
  
7. There are some mechanical restraints in psychiatric settings in a very limited sense. But they are probably not going to be the same techniques and equipment that the police use, and they wouldn't be used in the same way. A clear example would be somebody who has to be taken from a hospital to a court for a court case or somebody who had to be taken for a medical appointment at a general hospital, then it would be more similar to what you may have seen prison officers do where they, for example, handcuff their prisoner to a prison officer to stop them from absconding. So my experience is in that setting.

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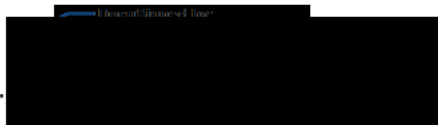
8. I have worked with the Ministry of Justice/Youth Justice Board in researching the effects of restraint techniques and in advising on the safety of new restraint procedures. I have worked closely with high security mental health hospitals (such as Broadmoor hospital) in developing their restraint training. I have given advice to West Midlands Police in relation to their training on restraint safety and positional asphyxia. I have given evidence and advice to the Adebowale inquiry into restraint and deaths in police custody in London.

**Restraint research**

9. One of the difficulties in coming to clear conclusions about real-world cases is that it is impractical to conduct highly rigorous studies of real world cases. It's very difficult to get to the bottom of exactly what was happening and what the medical state of the person was at that moment. The number of cases is also small, so it is impractical to carry out studies using what are considered to be highly reliable research methods (such as 'randomised controlled trials'). In order to back up the information that we have from real-world cases, if we conduct research in a laboratory situation, we can control the variables much more carefully and we can also take measurements that are actual proper empirical measurements at the moment while the person is being restrained.

10. The research in relation to restraint includes measurement of lung function and other physiological variables during restraint. Essentially, what we do is we take volunteer participants and we'd restrain them in actual restraint positions that would be used by various authorities in the real world, whether that be the police, prison services, high-security mental health hospitals. Having restrained the person, we would then measure their lung function and we would use technology which enables us to measure a variety of different measurements of breathing all at the same time. So, by allowing the person to breathe while restrained, we would be able to take a measurement of, for example, the volume of breath that they could take, how long it took them to empty their lungs, the rate at which they could empty their lungs, and we would get a variety of different measures during one restraint. We would then compare the person's lung function while they were being restrained with their lung function while they were not being restrained, and from that we can get quite clear indications as to the effect of the restraint.


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11. As well as having the volunteers in real restraint positions, we would also apply physical pressure to the volunteers' bodies during the restraint. We can show that positions where the person is in a flexed position, a bent position, or where pressure has been placed upon them would create more of an effect on their lung function. There are limitations of laboratory studies. We're studying something which is known to kill people, so the very first thing we have to do in terms of ethics is to demonstrate how we've controlled that risk. Therefore, for obvious reasons, we couldn't subject the person to the same degree of force as would be present in a real-life situation which actually resulted in a death. So, as well as having advantages in a laboratory study because we can take precise measurements, you also have disadvantages, limitations to laboratory studies, because certainly in something where death has occurred in the real world, we would have to have limits to how far we could go in terms of restraining the volunteers. We certainly couldn't do anything which, could reasonably be expected to be harmful to the person. So there are strengths and limitations to this type of study.

12. I have been asked whether the research data would be able to show the effects of struggle against restraint i.e. whether volunteers involved in the studies would be asked to struggle against the restraint. Our research does not, but there is research from other teams of researchers doing similar work. So, essentially, the same type of research I just described to you: volunteer participants in a laboratory, and then the person is restrained and various measures are taken. There is one particular team in the USA, and you will see names such as Chan, Vilke, Neuman, etc. They appear in different orders, dependent on which study it is, but it's the same team and they have studied whereby the participant is engaged in exercise before the restraint, and they've also conducted studies where the person continued to resist, or they would call it the person continued to engage in activity during the restraint, so that the load on their lungs and heart would continue to simulate what would be present during restraint. Either way you do it, the limitation remains you can't do anything that would be predictably harmful to the participant.

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13. So all of the laboratory studies will have the advantage, the strength, that they can be precisely controlled and we can actually take proper scientific measurements. They will have the limitation that we can never do anything which would predictably cause harm to the person, which is one of the reasons why we stay at the level of saying, "We'll test the position," not testing it in the sense of, "What would happen if we put huge amounts of weight on the person and we had a lot of exercise?", etc., and we would usually use our research to inform people who were setting up, for example, a new training course and we would measure the effect of their proposed restraint technique before they put it into the training package and used it with people in the real world, and we would measure, "Okay, you're proposing to restrain somebody in a particular way. We'll test that particular technique for you, and we will look at what will be the effect of that technique in the real world."

14. In terms of doing my reports, I wouldn't rely only on our own research. I think it's very important that it would also include any and all research that I'm aware of from any other research team or any other official body. So my report does make mention of, predominantly, in fact, research from other academic and scientific teams.

**Restraint in a mental health setting**

15. I have been asked about some of the difference between restraint in a mental health setting and when restraint is used by the police. Key differences: in a mental health situation, you often have a much greater knowledge of the person that you're restraining. So we would know before anything happened at all that this is a person with a mental health problem, we'd know-- many times we'd know what it is that they would probably already had spoken to us about what it is they're thinking and what they're frightened of, what they're angry about etc. and I do think one of the key ones is that in a mental health setting the person would have been searched, so we'd know that that person is or is not in possession of a weapon. I would see the police situation as having a much greater degree of uncertainty in the situation, and there would certainly have to be situations-- there would certainly have to be issues where they would have to act on what they believed to be the case as opposed to what the case, whereas in a

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mental health setting we would have much greater knowledge of the facts and in particular the point that we're dealing with somebody who's mentally ill and, to a degree, may not be responsible for their actions or able to control their actions. I think there's a significant difference in that. In terms of physically what we would do, the difference is not huge. I think the key difference is that in a mental health setting we would not use any kind of striking technique that might injure somebody, but to actually hold somebody and restrain them, that would be very similar.

16. In a mental health ward, whether a patient has been admitted for 24 hours or a few weeks, for either patient, you have a substantial amount of knowledge about them compared to the police encountering an individual on the street. We would have people up to and including years of experience of them, who are still being violent. There's no magic available to psychiatry that can cure everybody, as with any other branch of medicine. However, it's very, very rare that we would have somebody that we have essentially no knowledge of. I honestly can't think of a circumstance where we would have as little knowledge as those police officers would have had that day. We would always have more knowledge than that. At an absolute minimum, those police officers would have brought Mr Bayoh to a hospital and, by that point, they would have told us a series of things when they handed him over to the hospital. So I cannot imagine a circumstance where we would have that little knowledge of the person. In writing my report, I very much take that into account because it is a different circumstance. In that situation, my opinion is that the officers must be able to rely on what they believed to be the case at that point rather than what necessarily we can objectively say was the case with hindsight, and I think that is a big difference.

17. In a mental health setting we also have the option of using sedatives. The difficulty with that is if you were faced by somebody who was very mentally disturbed, they'd probably be unlikely to take that from you orally, so you would have to restrain them first but, in terms of after we'd initially restrained the person, quite quickly we would proceed to giving sedation perhaps by injection. I don't believe it would make any difference in this situation because everything happened apparently within four or five minutes, but in other cases that I'm aware of where people are being restrained by the [redacted] minutes, 20 minutes, 40

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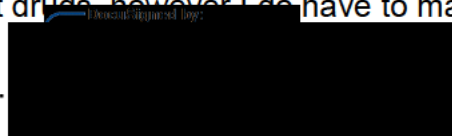
minutes. We wouldn't want to do that because once we'd initially restrained the person, then we would sedate them but, in this occasion, I don't think that would make a difference here because I think within three/four/five minutes of an incident occurring, we probably wouldn't have been able to have given any sedation, and if we had, it wouldn't have had any effect yet. So I think up to that point, it would still be very similar.

18. I have been asked about the advice I have provided to police forces on safe restraint and specifically the experience I have in terms of understanding police restraint and use of force generally. My understanding of these matters has come through a dialogue with the individual police forces.

19. I have been asked about my knowledge of risk factors for restraint including specific medical conditions. My title "Dr" is from a PhD scientifically studying and academically studying a particular issue. So I emphasise I've done the empirical laboratory research, but I've also studied extensively, since about 1996, every case that I have heard of and can get information on, whether that be mental health, police, prison services. There's been quite a few in immigration cases where people are being removed, not just in the UK but in other countries, and most recently in private security at night clubs and shops etc. etc. So, I've studied those very extensively. I would describe it as a level of knowledge which comes because those issues are peripheral to my area of expertise. So I can look at a case and understand what is going on with it. For example, in one case in Japan, there was a claim that the deceased had a heart condition. I can't comment on whether that man had a heart condition or not, but I did need to understand it sufficiently to understand how it might impact on the restraint issues, and they retained a separate expert to look specifically at whether he have a heart condition or not.

20. So I would say my level of knowledge of general medical conditions is peripheral to the area where I'm expert, but I could not understand the areas where I'm expert unless I had that peripheral knowledge. In this case, I think that what would be peripheral to my expertise would be the issue of the illicit drugs. So I would not claim to be an expert on illicit drugs, however I do have to maintain a

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certain degree of knowledge to understand would that particular drug be of any relevance at all to this or not? But I would not be the subject matter expert on that particular drug.

**De-escalation in a mental health setting**

21. I have been asked about the use of de-escalation in a mental health setting. This is an area I would feel comfortable commenting on. I genuinely couldn't put a number on the number of people who are very, very mentally ill, and there was either the potential for violence, or violence was prevented, or it was only prevented due to restraint. It could easily have been more than a hundred times in a year during my career – easily. De-escalation is incredibly important. You can often talk to people and even by something as simple as not presenting aggression to them, you can reduce the levels of aggression they will show. You can maintain a distance from them and not make them feel as if they're under pressure. You can speak to them, attempt to understand their point of view on this, which may be so radically different from what you can see or hear yourself that it's crucial you understand that, because it explains to you why is this person behaving in this way that is otherwise not understandable.

22. You can then take that into account in how you interact with them. To give an example: one man, who was a very fit, strong young man, very well built and trained in kickboxing – he was a martial artist. If you were to approach him and try to restrain him, he would fight in the most extreme way. Once you had an opportunity to talk to him and ask him why that was, it was because he believed that people were going to rape him. Therefore, as you would expect, he's fighting to his utmost ability to defend himself in his mind. So to keep a distance from that young man and not approach him, you're avoiding what would then cause him to fight. There's a variety of things that can be done, so that's absolutely crucial, but what I would want to counter is the idea that de-escalation always works or is even always possible. It would also be necessary to say that as some people who are experiencing psychosis at that moment, frankly they are not even aware that you are speaking to them, and they will confirm that after the event, when they have recovered their health.

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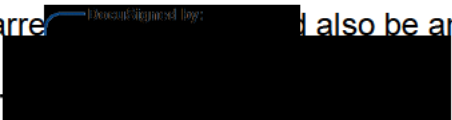


23. Others will be incapable of taking into account what you're saying. They are so certain of what they believe due to the disturbance of their mind that you telling them something different to that, they are not capable of taking that into account. In a legal sense, they lack capacity to make a decision about these things. They cannot take what you're saying into account. Some people just react so rapidly that, in a physical sense, you have no opportunity to engage with them whether it would work or not. So whatever is in their mind causes them to respond in a proactively aggressive manner and that was always going to be the case before you even arrived on the spot. They had some reason why they were going to attack you. In the same manner that a soldier encountering the enemy will attack them, there's not going to be any room to persuade him otherwise. They have beliefs and experiences that tell them they have to attack that person there and now. Until you can talk to the person and ask them – either during or after the event – you will have no knowledge of that, and no ordinary person can understand what that person is thinking until they explain. Even then, people who are not used to talking to psychotic people have difficulty understanding what they're saying sometimes.

24. An example would be where a man, he killed two people because he believed his tattoos were talking to him. Now, until you talk to him and he explains that to you, I with my experience could have no understanding of why he committed that act, and for the average person, even when it's explained to them, they have difficulty understanding what the psychotic person is thinking. Firstly, de-escalation is really, really important and should definitely be used, not just for the safety of the person who is going to be arrested but for the safety of the officers. You know, on many occasions, the people who get hurt in these confrontations is the officers as well. If you can persuade the person to surrender themselves and there not be any violence, that is in everybody's best interests.

25. However, I could not support a view that de-escalation would always work or would even always be possible, and I think one of the criteria here would be: is the person going to be willing to stand there and talk to you, or is the person already advancing on you in an aggressive manner? In which case, I know the police officers are there to conduct an arrest. I also be an element

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of self-defence in that. So, again, as with many of these things, it's not an issue that is black and white. This is an issue that's got a lot of nuances to it. The de-escalation, very important and very desirable, but cannot always be used, and particularly with people who are psychotic. They are responding many times to what is in their head not to what you're doing, and sometimes you have to accept that.

26. I have been asked whether in a mental health setting, whether you would always attempt de-escalation or whether you would have to have some idea that it would be successful. It is similar to the Police Use of Force continuum in which you would try to use the lowest level of intervention on that continuum which is practical, but sometimes the low levels may not be practical. So, no, we would not always be expected to attempt. Let's take this to an extreme example. If I see a patient is immediately about to assault another patient, I would not attempt de-escalation. My first duty would be to protect the other patient and ensure that they're not attacked first, but then we would use de-escalation techniques to try and calm the patient even though we had restrained them. If we can now calm that person, then we don't need to restrain them any longer. We don't need to give medication by injection, etc. So that would still be desirable, even though we have had to restrain them, but I couldn't support a view that you always have to attempt de-escalation first before you use force. Sometimes the circumstances are such that you must use force first, and I would still believe that that does not preclude the use of verbal interventions, even though you have restrained a person.

27. However, as I've mentioned one difference from meeting such an individual out in the community, is that in a mental health setting the person would usually be searched before we would interact with them. I think that would be the big difference between my experience and that of police officers.

**Sickle Cell Trait**

28. I have been asked whether sickle cell trait has any relevance to cases where a person is restrained. Yes, in the academic literature, there's two strands to this. It's very unfortunate these things become politicised, and both of these strands are politicised as well, but we're trying to look at it just academically. Strand

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number one, active sickle cell disease where there's sickling of the red blood cells: the person's effective haemoglobin level has been substantially reduced – absolutely, that is relevant to restraint death. So, in that case, somebody who is actively suffering from the sickle cell disease at that moment, their blood cells have been damaged by the condition at that moment, those blood cells are misshapen and unable to carry oxygen to the normal state, and the doctors can actually take a measurement and tell you to what degree the person's ability to carry oxygen has been reduced relative to a healthy person. If that is happening and the contention is that the person has died due to asphyxia, then clearly that is relevant to that individual. So, yes, sickle cell disease is definitely relevant in some cases.

29. The difficulty with this and the other side to this is there's also literature that discusses the way in which that can be used to excuse deaths when at the time that the person died they had sickle cell trait, but at the moment when they died they had no significant physiological harm from it. Their blood was functionally the same as yours and mine, it was capable of carrying oxygen and, in their case, at the moment they died, it had no relevance to their death. So we would have lots of people who carry sickle cell trait, and at this minute, if they were to be restrained and they were to die, the trait of sickle cell would be irrelevant to their death, and one of the downsides to this could be that where people of African descent die in police custody or other people who are restraining them, it could be easy to say that that person has died because of the sickle cell and not because of the restraint. You would need to show that at the time the person was restrained, they had active sickling of the red blood cells and therefore their ability to carry oxygen was reduced at that moment. As I say, because of that, there's controversy in both directions. Controversy number one is that some people who are seriously ill with sickle cell disease at that moment have not received adequate care and attention perhaps in prison custody, and they have come to harm because they didn't receive medical care because nobody took it seriously. The other issue is that if we assume that everybody with sickle cell condition, the trait, or worse yet, everybody who's of African descent is at increased risk of dying, we could easily disregard the role that the actions of the people who restrained them took in that.

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30. In the literature, it's definitely a two-sided issue. We have to be very cautious about that one. Again, not my direct area of expertise, but in the literature one of the issues is that at post-mortem it can be difficult to tell whether the person had active sickling or not, and that would, of course, be something that a pathologist would need to give expert opinion on but, in a general sense of the restraint safety, sickle cell trait and disease can have an impact in two directions in terms of considering it.

31. I was not aware that Mr Bayoh had sickle cell trait at the time of preparing my report. I am advised this information was not available at that time and that testing was undertaken subsequently to my report being completed. Overall, I would say that having sickle cell disease is a risk increasing factor for restraint death. Certainly in cases that I've been asked to give advice to hospitals where they have that difficulty where very disturbed patients might need to be restrained, but also they were very aware that they had sickle cell disease and there were substantial reductions in their active, effective haemoglobin, and therefore they were quite correct to say that person was at increased risk while they were being restrained and they definitely did need to take more care with that person in terms of asphyxia. So I would be more than happy to say that active sickle cell disease a risk-increasing factor. I could not say that there is increased risk with regard to a person carrying the trait but without active sickling of red blood cells and without a reduction in effective haemoglobin.

32. I would be concerned about two things in terms of police response or prison response or mental health response to people with sickle cell trait. Issue number one is, if you were told that the person had sickle cell trait, ignoring that and failing to give them adequate medical care, for example. That is a real risk and has happened. People have not taken it seriously enough. The other issue I would be concerned about is that it can become an excuse for any person of African ancestry to be assumed to have been killed by the sickle cell disease, when there is no conclusive evidence that was the cause of death, and that could be used effectively as a pass for any action to say, "It was not our restraint that

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did this. It was the sickle cell disease". So both of those issues, I think are potential pitfalls in terms of looking at that issue.

**Sleep aponea**

33. I have been asked whether sleep aponea is a risk increasing factor for restraint. I've never heard that raised in relation to a restraint death case. Obviously, I couldn't tell you unequivocally that it has no relevance, but I have not heard it raised. I'm definitely not aware of anything in the literature for restraint death that says it's risk increasing, but I can't rule it out from the literature. It's a question perhaps for a forensic pathologist.

**Dr Parkes report**

34. I am referred to my report (COPFS-04192(a)) at page 2: *"Sheku Bayoh was a muscular man, which has been associated with restraint death. Heavily muscled persons may be capable of increased resistance thereby prolonging restraint, and a large muscle mass may increase ventilatory demand, the need to breathe, which would increase the risk of asphyxia if his ability to breathe was limited by restraint."* I am asked to comment on this. There are two elements here. First off, one of the risk factors is obesity in the sense of the person is fat, and particularly people who have a large abdominal panniculus, which in layman's terms is that they've got a large and protruding abdomen, so they're carrying their body fat on the abdomen. The contention is – and I think there's a certain amount of evidence to support this – that when that person is placed face down, that abdomen, which would normally protrude in front of them, is compressed against the ground, and it therefore increases the amount of pressure that's placed on their diaphragm and lungs, etc. I haven't seen anything that suggests that Mr Bayoh was obese, and his BMI was 25.6. A BMI of up to 25 is normal, and in the case of a man who's clearly kept himself fit, it would be very unwise to say that 0.6 has any relevance whatsoever. That could be because he's kept himself muscular.

35. In terms of muscle mass and its impact in restraint, I'm not aware that this is something that been examined in an empirical study in a laboratory. However, what we can see is that, in terms of actual practical cases, some of the people who have died are people who, in the normal course of life, would be strong,

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fit men. I can think of one case example where there was an individual who was a body builder and was a very large man, and it made it very difficult for the police to restrain him. Because he'd taken drugs, he wasn't able to make a sensible decision for himself to stop resisting, and the police were obliged to restrain him for a considerable period of time, the level of force they had to use was increased because of his size and strength. It is reasonable to say that where somebody has a lot of muscle mass and they're using it to its limits, you could argue it's beyond their normal limits, that would then increase the demand for oxygen and it would increase the amount of carbon dioxide etc. that they're producing from the muscles, and therefore that would be a risk increasing factor.

36. There's no empirical research on this in the way there is with the obesity so I wouldn't consider muscle mass to be as clear a risk-increasing factor as being obese and fat. However, I think it is reasonable to say that that it is a risk-increasing factor, whether that be due to the increased ability to resist restraint or whether it's due to the increased demand for oxygen whilst being restrained – it could be either one.

**Dr Cary's Report – restraint and cause of death**

37. I have had sight of the report of Dr Nat Cary (COPFS-00196). I have been referred to page 6 of the report, where he states with regard to the cause of death: *"In terms of any role for restraint, this cannot be separately considered from struggling. As is commonly the case in acute behavioural disturbances, the deceased displayed remarkable strength and stamina. Ongoing restraint and struggling in these circumstances is very likely to lead to significant metabolic disturbances with early breakdown of muscle releasing potassium, which can precipitate cardiac dysrhythmias and the development of metabolic acidosis. Indeed, in my opinion, given the presence of a background of potent stimulant drugs, this case cannot be viewed simply as an example of a case of sudden death during restraint. I therefore entirely support the cause of death proposed, namely: 1a sudden death in a man intoxicated by MDMA (ecstasy) and alpha-PVP whilst being restrained. The only suggestion I would make would be to*

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*substitute the phrase 'whilst being restrained' with 'in association with struggling and restraint.'*

38. I am asked whether I feel able to comment on this, in so far as it falls within my expertise. I am not a forensic pathologist and would not form a conclusion as to cause of death. However, this falls within the area I study. Put simply, Dr Cary outlines one of the key theories as to how to death would occur in a restraint situation. I think the lay public automatically assume that if we say the word "asphyxia" that means there's a lack of oxygen. However, being unable to breathe to the extent you need to be able to breathe to safely sustain your level of activity is what Dr Cary is talking about here. This is one of the key theories on that would be not so much that it's anoxia, which is lack of oxygen, but it is increased levels of carbon dioxide is one issue. This would increase the acidity of the blood, which is then referred to as acidosis. Dr Cary also mentions cells being broken down, which is called rhabdomyolysis. Eventually we would come to a situation where that abnormal blood chemistry leads to the heart no longer being able to function in its normal way. So that is certainly one of the theories and a very reasonable theory as to how somebody would die during restraint, and yet there is no clear physical damage that would explain the death, and none of what was said there would leave clear pathological signs for a pathologist to pick up after death and so it's entirely consistent with these kind of cases and, in fact, the circumstances of Mr Bayoh's death.

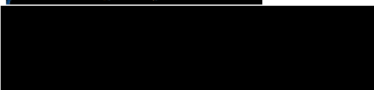
39. I am asked whether the metabolic effects of restraint and struggle against restraint were something that I considered as part of my report. Yes, inherently so. I didn't go into detail on the mechanism, but, yes, in my opinion, that is one of the most important mechanisms of death during restraint where the person's ability to breathe is compromised. I think it's entirely consistent, as Dr Cary suggests, with the fact that – I think I've mentioned it here – one of the main risk factors is prolonged, resisted restraint, and that is present in many of the cases that are observed and would be consistent with this view that where it's a strong man resisting, his ability to resist for a period of time, the level of force that the people trying to restrain that person would need to use, the extent to which they would produce carbon dioxide and potassium increased in that

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person. The “struggling,” as Dr Carey says, is certainly a major risk increasing factor. So I would have absolutely no disagreement with that whatsoever. In contrast, to take the opposite extreme, many drug users, for example, are very, very slightly built because they don't eat very much, yet it's not these individuals who most commonly die during the restraint. It is more commonly a person who's solidly built or obese, and it's all entirely consistent with that theory.

40. I am asked how I have gained knowledge and understanding of these matters. There's different ways of having an expertise and knowledge on things. One is to do the research yourself, the other one is to just keep reading other people's research and case reports etc., which I've done. Starting in 1996, I have reviewed a high number of scientific reports, articles, and news reports. I've got collections of the written records from coroner's court cases etc. So my knowledge and understanding would come from these and in particular, the literature that other scientists have written.

41. I have been referred to my report at page 2, *“In particular I note the post-mortem toxicology findings which demonstrate the presence of illicit drugs, namely alpha-PVP and MDMA. I would consider the presence of illicit drugs to be a significant risk-increasing factor.”* I am asked to comment on this. From my position, I would say that because my study of the literature is that illicit drugs, particularly stimulant drugs – amphetamine, cocaine, or alpha-PVP in this case – are commonly present in restraint death cases. In terms of the literature, it's suggested two main routes by which this has an effect. The first one is the behavioural effect: the fact that the person is mentally disturbed due to the drugs is the reason why the police (or other emergency response staff) have been called in the first place and why the person is being restrained. It's the reason why the person does not make a sensible decision i.e. “There's four or five policemen here. I've lost. Stop fighting,” as most people would do. They're not able to make that decision because of their mental state. Then, thirdly – and this is not my area of expertise so this is where I think you would need somebody who is expert in a particular drug – it is also suggested that there can be direct physical effects due to that. One of the mechanisms that's suggested for this is hyperthermia, which it's unfortunate we don't have an early measure of Mr

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Bayoh's body temperature. I think most lay people are aware of the idea that if people take drugs like MDMA, ecstasy etc. etc., their body temperature can raise on the dance floor to the point where otherwise healthy young people have collapsed and been seriously harmed or troubled. So it's that kind of contention, that the drugs in and of themselves could be fatal.

42. When we're talking about stimulant drugs, they also cause the release of chemicals within your body like adrenaline and noradrenaline, which will have an effect on your heart. So they will cause heart rate to increase and arguably could cause heart arrhythmias. So there's little doubt that there are people who have taken these types of stimulant drugs who have died without being restrained. Therefore, both from the literature on restrained death and from the literature on those drugs themselves it's clear that this is a risk increasing factor. In fact, in the real world, it's unusual to encounter a case of restraint death where the person has not been taking stimulant drugs. In the UK there was one case in particular, an immigration removal case, where people basically said this is unusual because there's no illicit drugs being used, and therefore the experts were all willing to be much more clear about their opinions because there was nothing else that would explain the death. So, from my point of view, I could only say that it was risk increasing because there's biology to explain that, and also illicit drugs of this type are commonly present in restraint deaths. So I think I would have to say that it is a risk increasing factor, but I would not be in a position to tell you whether that was what caused the death or not. So therefore, I can only be probabilistic. I can talk about what's more or less likely, what increases risk, what reduces risk, but I couldn't come to the point of being conclusive about the cause of death.

43. Again I have been referred to my report at page 2, *"I note the post-mortem finding of petechial bleeding; small areas of bleeding in this case found on the eyes. Petechial bleeding is commonly found in cases of death following restraint. However, petechial bleeds are not always present following asphyxia. These bleeds are due to increased blood pressure in small blood vessels, which burst. Where a person has been restrained on the ground with officers holding them down to the ground, petechial bleeds would most likely result from compression*

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*of the deceased, but do not necessarily prove that the compression was of a nature and duration sufficient to cause asphyxia. Due to the presence of petechial bleeds it is more likely than not that Sheku Bayoh was subject to compression during the restraint.”* I have been asked whether my conclusions here fall within my expertise or whether I am drawing on the materials provided to me at the time of compiling my report. I am happy to comment on that and I've commented on that in other cases. Because petechial haemorrhages are present in so many of the restrained death cases and then people will give evidence to say that the death was because of asphyxia, people automatically assume that petechial haemorrhages prove asphyxia. I don't believe that's the case. I've not seen a mechanism in the literature whereby being deprived of air would cause you to have petechial haemorrhages.

44. For example, in one study they studied a substantial number of people who'd killed themselves by placing plastic bags over their head, and clearly they can breathe freely but they're re-breathing their own air and eventually, it will kill them. Those people will not have petechial haemorrhages. So, they're clearly a death that has been caused by, to put it broadly, asphyxia. They would be killed by the increasing level of carbon dioxide rather than the lack of oxygen but they do not have petechial bleeds. If we took as another example, people who have been trapped-- a man who was trapped between a building and a lorry. So he was at the side of the lorry and the lorry crushed him against the wall. He got substantial petechial haemorrhaging, not just in his eyes but on his face and his lungs, all sorts of areas, but he did not necessarily die from asphyxia.

45. What I'm saying is that the petechial haemorrhaging is caused by compressing somebody so that their blood pressure increases and then tiny blood vessels, in visible areas like the whites of the eyes and on the insides of the eyelids, will burst and that gives these pinpoint petechial haemorrhages. So the petechial haemorrhaging is more reasonably said to prove the person has been compressed, which is why it's present in many of these deaths, but it doesn't show asphyxia. Dr Cary's work, for example, shows that the people who died at the Hillsborough tragedy clearly died from being asphyxiated, but many of them did not have petechial haemorrhages. So it would be more reasonable to say

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that the petechial haemorrhages prove the person was compressed, rather than to say it proves that they were asphyxiated.

46. I have been asked whether I would agree that petechial haemorrhages can also be caused by CPR. Yes they can. There's an important difference here, compression caused during the restraint by the police officers or compression caused during attempts to resuscitate him. I think you would have to say that you could get petechial haemorrhaging from cardiac compressions. However, one quite good study demonstrated that where there's petechial haemorrhaging found in the person after death, in a hospital where they experienced cardiac compression, the petechial haemorrhages were likely to have been present before the CPR. So I think you would also have to say that the theory that the petechial haemorrhages are caused during the cardiac massage, during the CPR, that is not a strongly demonstrated and proven theory. I think you would also have to say, where in a situation like this where it's important to be precise, you would also have to say that that could not be excluded. The scientific evidence is not strong enough to exclude that.

47. At page 2, my report then confirms that I read the witness accounts and watched the video of the incident. I outline three positions in which it appears that Mr Bayoh was described as being restrained. In terms of being precise about what positions Mr Bayoh was restrained in, I found the video footage of almost no benefit. I found it very difficult to see to that level of detail. At times I was having difficulty following actually who was who on the video. The footage was of very limited quality. So, on this particular aspect, I didn't gain anything very much at all. It would have been very helpful if that video would have allowed me to see exactly how Mr Bayoh had been restrained, and to eliminate any doubt caused by the fact that it was people's recollections and statements after the event. On this aspect, I got very little from the video. In my report, I took the view that I could never confirm nor deny the particular positions that I read about and therefore, I would comment on them, "If this had occurred, the relevance of this to risk would be as follows." Obviously, as I said, not being able to see precisely on the video, I could neither confirm nor deny exactly what any individual did. I could comment on, if in their statement a witness mentioned a particular position then I would

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comment on that as to what level of risk that might cause. Whether it's minimal or whether it's considerable, I would still comment on it.

48. I have been referred to page 3 of my report where I state: *"I note that the officer who initially restrained Sheku Bayoh, Officer B, is reported to be a large man of 25 stones body weight (159kg) and this would likely to increase the level of compression and restriction of breathing caused by the restraint."* I am asked how I have come to this conclusion – whether my conclusions are drawn from the literature. There's two studies that I'm aware of where they've compared the effects on measured lung function and they've compared the effects of one level of weight placed on the volunteers, compared with another level of weight placed on the volunteers – this is in humans. They did find that there was an increased effect on the ability to breath if the level of weight placed on the volunteers was increased.

49. There are also animal studies from Japan, which you certainly wouldn't be allowed to do in the UK or any western country. In Japan, they have different laws in relation to this. They experimented by placing weight on animals and in that, they can quite clearly document that the greater the weight, the greater the effect on the time taken for the animal to die. Basically, when you reached a certain level of weight on the animal, relative to its own body weight, then you would cause death much more rapidly. Their threshold was if the animal had more than four times its own body weight placed on it, then it would be fatal very rapidly. So, yes, there is. Not from my studies because I wouldn't be allowed to do a study like that, but from other people's studies, yes, there is evidence that increased body weight has increased effect on breathing, yes.

50. I understand one of the issues for the Inquiry is making recommendations. This wasn't in my brief of this report, but for the Inquiry part of the brief was making recommendations to reduce the chances of this happening again. This is actually the second time I've heard where a case involved a very large officer and to my knowledge, to this point, officers have not been advised regarding that during their training. Police officers may need to show caution due to their increased body size and mass compared with a much smaller officer. I think that is

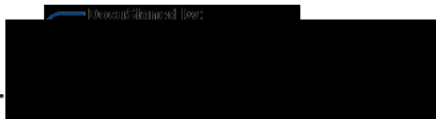
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something that might be worth including in guidance to people. While the Police Scotland guidance covered positional asphyxia, I don't recall this particular aspect being covered. In the Mubenga case, an Angolan man that was restrained on an aircraft. One of the security officers that restrained him was a very large man and I think there will be reason to believe that there's increased risk from that and perhaps it would be helpful if people were given warning regarding that during their training. I haven't seen that in anybody's training.

51. I am advised that generally the evidence at the Inquiry was that Sheku Bayoh was prone, and that he was only on his side at the point that he became unresponsive. I understand that there is some evidence that he was supine but that's disputed, and the majority of the evidence is that he was prone. In terms of that, most of the literature is regard to prone restraint and the risk increasing issues in that. In the NHS in England and Wales there's quite a strong guidance that prone restrain should be drastically limited. There are several programmes of restraint training which say do not place people in the prone position deliberately. They may end up in the prone position because the individual may effectively place themselves in the prone position in a struggle and that's accepted; however you should not place the person deliberately in a prone position. So there is certainly an association between prone restraint and restrained deaths, and a lot of the literature revolves around prone restrained positions. You have to be clear and say that's not the only position that somebody could die in, and you also have to say that part of that is because if somebody was being very violent and you were having a very substantial struggle with them, that might well be the position you want to put them in, for example, to put handcuffs on the person if the hands are behind their back.

52. Certainly, the literature I'm aware of, a great majority of it would say prone restraint is more restrictive on breathing. There are several pieces of literature that say that, "We looked at a certain number of deaths, and a certain number of them were in prone restraint." So you can't conclusively prove that prone restraint has some special effect on people that's fatal, but it is reasonable to say that it's risk increasing. If possible, it would be better to avoid it.

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**Length of restraint**

53. I am advised that the Inquiry has heard evidence regarding the restraint of Mr Bayoh. I have been provided the following summary of the evidence relative to the restraint:

- By 07:21:13<sup>1</sup>, a person is seen on CCTV as having been brought to the ground.
- By 07:21:19 hours, Mr Bayoh was on the ground and at this time PC Tomlinson’s emergency button on his radio was activated.
- PC Walker had Mr Bayoh in the prone position, face down with body lying flat on the ground.<sup>2</sup> PC Tomlinson joined PC Walker and delivered 2-3 baton strikes to the Achilles area (unknown if both legs or one) to elicit pain compliance.<sup>3</sup>
- At 07:21:19, PC Tomlinson’s emergency button was activated. Mr Bayoh was being restrained on the ground at this time and PC Tomlinson was lying across Mr Bayoh’s legs.<sup>4</sup> PC Tomlinson recalls that Mr Bayoh was able to use his right hand to press up from the ground. Mr Bayoh was described by PC Tomlinson as being in a ‘press-up style position’.<sup>5</sup>
- PC Paton placed an extended baton across Mr Bayoh’s left bicep in an attempt to control his upper arm.<sup>6</sup> PC Paton was applying his full weight to his bicep.<sup>7</sup>
- PC Good recalls seeing PC Walker lying across the top of Mr Bayoh’s back towards the upper half of his body to prevent Mr Bayoh from pushing up from the ground.
- PCs Smith and McDonough joined the restraint efforts. PC Smith was kneeling at Mr Bayoh’s feet and PC McDonough was kneeling to Mr Bayoh’s left hand side. PCs Good and Smith successfully applied leg restraints in the prone position.
- At 07:21:38, PC Smith transmitted, “male secure on the ground”.<sup>8</sup>

<sup>1</sup> CCTV footage

<sup>2</sup> Inquiry Transcript dated 26 May 2022, page 25 lines 20-22

<sup>3</sup> Inquiry Transcript dated 25 May 2022, page 132 line 19 – page 133 line 3

<sup>4</sup> Inquiry Transcript dated 26 May 2022, page 47 line 14 – page 48 line 5

<sup>5</sup> Inquiry Transcript dated 26 May 2022, page 28 line 3

<sup>6</sup> Inquiry Transcript dated 20 May 2022, page 39 lines 1-2

<sup>7</sup> Inquiry Transcript dated 21 June 2022, page 67 line 3

<sup>8</sup> SBPI-00047, pg 5

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- At 07:22:24, PC Walker transmitted, “male in cuffs still struggling”.<sup>9</sup>
- The majority of police and civilian eyewitnesses gave evidence that Mr Bayoh was in the prone (full prone or partial prone) position until the point that he was turned on his side, at which time the officers noted he was unconscious and PC Smith sought an ambulance (07:25:17). PC Walker states that Mr Bayoh was supine (on his back) throughout.
- At 07:25:17, PC Smith transmits, “this male now certainly appears to be unconscious, breathing, not responsive get an ambulance for him”.<sup>10</sup> By this time, handcuffs and leg restraints had been applied.
- At 07:29:30, Sergeant Maxwell transmits, “this accused is now not breathing, CPR is commencing”.<sup>11</sup>
- 07:21:13<sup>12</sup>, a person is seen on CCTV as having been brought to the ground.

54. Depending whether you take 07:21:13 or 07:21:19 as the start of the restraint, it suggests that he was restrained for a period of 4 minutes and 4 seconds or 3 minutes and 58 seconds. In my report, with the information that was provided to me at that time I had the length of the restraint as 4 minutes and 12 seconds. Taking the figure of approximately four minutes, I think the relevance to that would be that, in terms of risk increasing factors, prolonged restraint has been identified more than once as a key risk increasing factor. Four minutes is at the bottom end of that. So to take another example, if we were to take an example of a high profile case in America where a man, apparently otherwise healthy, was restrained by the police for 10 minutes and died. If you have time periods like that, and also the man who died was saying, “I can’t breathe, I can’t breathe, let me up, I give in, etc.,” then you would obviously feel much stronger in saying that the restraint was what caused the death. Where the restraint is a much shorter period of time and we don’t have evidence like that, it would be much more difficult to say precisely and with any certainty that that was what caused the death. Just based on the time, I don’t believe that you could rule it out, however it makes it much less likely and much less certain that that was the case.

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<sup>9</sup> SBPI-00047, pg 5  
<sup>10</sup> SBPI-00047, pg 7  
<sup>11</sup> SBPI-00047, pg 11  
<sup>12</sup> CCTV footage

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55. I have been asked whether I would consider the end point of the restraint at 07:25:17 i.e at which time Sheku Bayoh was noticed to be unconscious and turned onto his side. Or whether it would be 07:29:30 when it was noted that Sheku Bayoh stopped breathing and CPR commenced. I am advised that between 07:25:17 and 07:29:30, Sheku Bayoh was, if the evidence of PC Alan Smith is accepted, *"lying on his left hand side with his handcuffed hands to the front, other officers had hands on him I am not sure of the level of force being used but I do not recall having any concerns about it."*<sup>13</sup> It would be difficult to be so precise. I would still take the view that the duration of restraint is short compared with many other cases. Therefore it is not possible to attribute the death to restraint (only) with any degree of certainty or confidence. If the duration of restraint was much longer then the conclusions could be more confident.

56. There are a small number of cases where the person was restrained for a considerable period of time, they made clear statements that they could not breathe and they died. In those cases, I think you would find experts would be much more comfortable and certain in what they were saying about what the cause was and attributing it to the restraint. In this case, because of the relatively short period of time and because of the lack of evidence like that and because there's other potential causes – the drugs – then I could not say with that sort of degree of certainty as to my opinion being it was the restraint in and of itself that had killed Mr Bayoh. So I think the length of time is relevant, it does not conclusively exclude the restraint as the cause of death but it does mean that it is less likely than if it was a long period of time.

57. Again, bringing back to the animal studies, which are the only ones where we could in a laboratory situation measure exactly what's happening, the shortest period with those animals die would be just under four minutes. So it's right at the bottom end and that was with four times own body weight applied to them. So it's right down at the bottom end of that spectrum. In cases where experts have been much more confident in saying, "Attributing death to the restraint," the time periods have often been much longer than that. So, in the case of the

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<sup>13</sup> SBPI-00042 Rule 8 Statement – PC Alan Smith. Para 43

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immigration detainee, Jimmy Mubenga who died on the plane, that again is 10 minutes. George Floyd in the USA: 10 minutes. There's been cases where it's been 20 minutes, even 40 minutes, and in those cases I think the degree of certainty about it would be much, much stronger. So the time period is relevant here.


58. I'm asked whether, in my review of the literature, there is anything to suggest that if a person had sickle cell trait, whether that would impact my conclusions about the time frame of the restraint. I'm not aware of any literature on that. I am not aware of anything that would enable me to tell you whether the length of time in restraint until harm was caused would be reduced. I'm not aware of anything in the literature that would assist with the answer to that question.

59. I am asked whether there is there anything in the literature that I've looked at that suggests that the taking of drugs would have an impact on that time frame. I can't think of anything in the literature that would specifically relate drugs to time. I have offered another alternative than asphyxia, which is the effect that compression has on the heart and on major blood vessels in the torso. I think it may be three studies now that have looked at that. However, the level of knowledge and evidence on that as a potential cause of death is much less than the knowledge on the asphyxia death. So if it was going to be a very rapid death due to compression, then I think you would have to look more at effects that it has upon the heart and on the blood vessels in the chest. If you look at that area, then the level of scientific evidence is much, much less. That is much less well understood. I discuss this in my report at page 4, where I state *"In addition to the effects of restraint on breathing there is also body of scientific research and opinion regarding the effects of restraint on the heart and blood vessels. Laboratory research which involved compressing the chests of volunteers to simulate restraint has demonstrated changes in both the heart and the major blood vessels. It must be noted that this research is less extensive than the work on breathing during restraint and, in laboratory studies, the effect of compression on the heart and blood circulation has not been sufficient to cause potentially fatal effects in the healthy volunteer participants."*

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60. In relation to the effects of restraint on the heart, I have been asked whether there has been any further research studies in this area since my report was produced. Others may be aware of more, but I'm aware of one more study on that area. Although I think it's relevant, again, it's not conclusive. If I go back to the same point that I made about restrained asphyxia. If these events happen in the real world, the level of knowledge we have about exactly what happened and particularly what the exact physiological effects were during the incident, it's very difficult to get to the bottom of exactly what's happened. If we do it in a laboratory, then by definition we cannot go so far as to cause a potentially fatal effect. So the laboratory studies will always have that limitation. The only exception would be the studies that I've mentioned, which are animal studies. They could go as far as causing death – though not in the UK – but when they do that, you've now got the limitation is that's in an animal not in a human. So there would still be a limitation to those studies. So, I raised that as a potential cause but I could not say, conclusively, either that was not relevant here or was what caused death here. I'm not aware of any way of saying conclusively on that. It's difficult even to say it in a probabilistic way because I'm not aware of sufficient evidence that would tell us what the effects are going to be. I do raise it in the point of to exclude that restraint was causal. That would be one of the reasons why it would be difficult to just be unequivocally exclude restraint as the cause, because we have a body of knowledge there that's inconclusive but might be relevant to the case.

61. I have been referred to my report at page 3 where it states: *“Even where a person’s breathing is severely restricted by restraint and compression, the length of time for which they are unable to breathe must be long enough to cause harm before this could be seen as directly causing death. A relatively short period of restraint, such as in this case, would make it much less likely that death could occur due to the restraint asphyxia alone.”* I have been asked to comment on this. So, essentially what I've just been saying to you there: I think it's difficult to place a specific time limit on this and be absolutely specific about it. So, therefore, I would describe it in the sort of terms that I've just been describing, which is that a longer period of  other risk

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increasing and would make it much more likely that you could make a confident statement about whether it harmed the person or not. At this sort of length of time, I don't believe that you could make any clear and unequivocal statement as to whether it did or not. I think it would have to be a statement that it is possible, and it could contribute, but not that it was clearly the cause of death. This is why I would agree with the pathologist's cause of death, and not being explicit and not expressing an inappropriate degree of certainty about the restraint i.e. that being causal of the death.

62. I am asked on what basis I can make comment on cause of death. I can only do this from the basis of the scientific literature. I have not and could not conduct any study that would clarify this, not in the UK, so it comes from study of the scientific literature. But, at all times I've got to clarify this, this is probabilistic. I'm saying, "Most likely." I could not exclude that other things had occurred, but in my opinion based upon my knowledge and the scientific literature that is an entirely reasonable and likely explanation and I would regard it as the most likely. I am not aware of anything that I could do that could turn this into an absolute conclusion where I could say to you that that is fact. I could only say to you that that is the most probable thing based on my understanding of the literature.

63. I have been referred to my report at page 4 where it states "*Overall, my opinion on the contribution made by restraint to the death of Sheku Bayoh is as follows:*

- 1) *The precise contribution of restraint to the death cannot be determined with certainty.*
- 2) *It is unlikely that the nature and duration of this restraint would be directly and solely causal of death.*
- 3) *It is unlikely that death occurred immediately following this level of restraint - not at any other time - and the restraint made no contribution to the death.*
- 4) *In the balance of probabilities, the most likely impact of restraint is that the restraint contributed to the death of a man who was also at risk of sudden death due to the consumption of illicit drugs. Both restraint and*

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*illicit drugs are noted in the cause of death and I would fully concur with this.”*

64. This remains my opinion. The scientific issue is are we talking about two independent things or are we talking about two things, one of which contributed to the other? I am saying that it is more likely that we are talking about two things that cannot be seen as independent and not having any influence upon the other. To illustrate the point, let us take the opposite view just to test it. If we take the view that the restraint and the drug are two completely independent things, and that the restraint had no effect on the death. If they're independent, it would be reasonable and scientifically valid to look at-- Well, okay, what's the probability that this man, who was walking around the streets apparently-- it's certainly ambulatory and had a significant strength when the officers interacted with him, he did not appear to be on the point of death. This is not somebody that was laid on the pavement and the police and the paramedics were called to him, you know, an unconscious man etc. So, this man has been walking about the streets engaged in various activities since he'd taken that drug. We could calculate how long he'd been doing that and what is the statistical chance that he'd have died at the exact moment that the police officers restrained him. Now, if we did that, you could not rule it out that the restraint had nothing to do with the death, but his death happened at that exact moment by random chance would be unlikely.

65. This is when we get into the area of what's referred to in the literature as excited delirium. Some researchers and authorities on this would take the view that excited delirium, where the person becomes so disturbed due to the drugs, it causes such a disturbance in their brain functioning that this in and of itself would be fatal even if they had not been restrained. Some of the people who study the excited delirium, and the effects of the illicit drugs will tell you that people who use stimulant drugs in this way and develop excited delirium, that some of them will die without anybody restraining them, so this certainly can happen. So you could not eliminate that and say that that's impossible; it is possible. What you could say is that it appears unlikely, statistically, so that's what I'm saying there. For this to be entirely unrelated to the restraint, but it happened exactly the time of the restraint, is not impossible, but it is unlikely. Therefore, why I would

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support both Dr Cary and the original pathologists in mentioning both of those factors in the cause of death. It appears unlikely that the two issues are entirely unrelated and separate. My opinion as given here remains the same - I haven't changed my view on that. I cannot be conclusive about it, but what is the most likely cause? That appears to be the most likely cause.

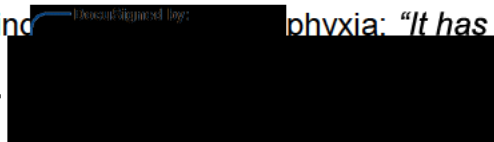
66. I have been asked whether I am qualified to form an opinion as to the cause of death. I was asked to comment on the impact of restraint to the death in my report and so I have. I am most comfortable when people ask me questions about, "Is this more or less safe? Did this increase or decrease the risk? Or to give advice about appropriate guidance for police or other agencies in relation to restraint. Those are the areas that I'm most comfortable and I feel I contribute most on. If people ask me the question, "What do I believe based upon my knowledge and experience was the cause of death?" I will answer that question, but I equally have no objection if a pathologist or some other person wishes to say, "the ruling on the cause of death is a job for the forensic pathologist." I have no objection to that point of view, and I would not contest the issue, would be my way of describing it. However, if somebody asks me the question, I will answer that question. I think there also has to be a differentiation for what purposes you're asking that question. If you're asking that question for the purpose of what goes on a death certificate then there is, of course, only one answer.

**Report of Dr Steven Karch**

67. I've read the work of Dr Karch. There are experts who would take a view that stimulant drugs in and of themselves, via excited delirium, via effects on body temperature and upon the heart, people will die expressly because of the stimulant drugs, and Dr Karch and his body of work would be an example of that.

68. I'm referred to the report of Dr Steven Karch (PIRC-02526(a)). The language of the report is very certain rather than being probabilities. I am referred specifically to page 6, it states "*Question 3, What is the physiological effect of restraint of the deceased in the circumstances of his arrest? Answer: given the details of this situation, the effect of physical restraint would have been de minimis.*" He then provides an explanation under the heading *hypoxia*: "*It has been*

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*postulated by some that the mechanical obstruction of chest movement, called asphyxia, because air exchange within the lungs is diminished, could be caused by multiple officers overlying the body, thereby leading to asphyxial death. There is no evidence that sufficient pressure was applied to the decedent's lungs. Petechiae, subconjunctival hemorrhage, and pulmonary edema were present but both of these abnormalities are utterly non-specific findings. Even if weight was placed on the decedent's back, experiments with human volunteers, published in peer-reviewed journals, have shown that when increasing amounts of weight were placed on the backs of maximally restrained volunteers (up to 250 pounds - 100 kg) no clinically significant effects were observed. Indeed, the whole "concept" of restraint asphyxia, as applied in this case, has been refuted many times in the peer-reviewed literature.*" I would agree with the comment on petechial haemorrhaging: it's not a sign that conclusively proves asphyxia. With regard to the effect of restraint, I think first of all we have to acknowledge, as I've already alluded to, there is a significant difference of opinion in the literature. If you were to go to purely the discourse in scientific journals where the language is moderated by the publishers – and by the writers, we're always cautious about the language that we use – you would see a substantial difference of opinion on this matter. As I mentioned earlier, one of the reasons why I would be probabilistic about my conclusions is because there is a difference of opinion in the literature. For me to be specific and certain about my conclusions I think is unwarranted when there's this degree of disagreement of opinion in the literature. So Karch is definitely from the other point of view. I would regard it in terms of if we drew it up on a spectrum, rather than just two camps, Dr Karch is at the opposite end of the spectrum to some people who believe that restraint alone kills people.

69. If we take his view here about the clinical studies, the problem we have here is, as I have mentioned, you would not be allowed to conduct a study which exposes the participants to anything which you believed in advance was going to harm them or kill them. That is non-negotiable in terms of getting ethical opinion. I differ from Dr Karch's position. If you asked us to tell you what the actual findings of the research were, we would probably tell you the same facts. Where I differ is the conclusion. The conclusion here that

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observed” and that's a common language that's used about this. This is where I would differ. There is no clinically significant differences being caused in the sense of nothing that can harm somebody or kill somebody has been demonstrated in the labs. Perhaps once more some exceptions to that. Dr Cary once experienced something which could potentially have been harmful and had to stop a study. But here's the point: what we've done is we've conducted a study which is inherently safe and then found results which didn't show anything unsafe and that's predictable.

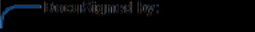
70. Dr Karch draws similar conclusions of the literature in relation to maximal prone restraint positioning (MPRP), also at page 6, saying “*A large body of literature suggests MPRP has very little clinical effect*”. We restrained somebody in a prone position, we put a fairly limited amount of weight on them and some of these people, their ability to breathe was reduced by 50 per cent. In a situation where they're being restrained, does that increase the risk to them? I must stress I always describe this as “risk increasing”. I think the difference here is that Karch is predominantly coming to this issue from a perspective of law enforcement officers in America being threatened with prosecution or litigation and that there is a lot of these cases. In that case you have to prove that these things caused the death. From my perspective, I'm looking at, “Is it risk increasing or risk decreasing?” because I am considering the issues from the perspective of “what should we teach people to do in order to prevent deaths?” This is where the substantial difference is. In my view, on humans we cannot conduct studies which will cause the level of effects which Dr Karch would look for, which could be a potentially fatal event. So I don't disagree in terms of what the findings are, but I do disagree with the conclusion that it's not clinically significant. We find in testing, if we do it with multiple people, we can have effects of about 30 per cent reduction in people's ability to breathe and the most extreme effect would be about 50 per cent reduction in their ability to breathe. So, again, we come down to the same issue that, “Can you find effects due to the restraint position?” Yes. Where Dr Karch is differing is that in the laboratory studies you cannot find an effect which would be harmful or fatal and that is correct and the reason for that is because we can't run studies in a laboratory that would be harmful or fatal.

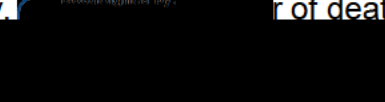
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71. I have been referred to Dr Karch's second report (PIRC-02527(a)). In this report Dr Karch outlines the history of scientific thinking regarding prone positioning and its effect on respiration. He's absolutely correct about the first person to raise these issues, Dr Reay. In 1992, Dr Reay was a researcher who did a series of articles in journals. He included one in the FBI journal to bring it to attention of law enforcement and he also did a couple of small research studies. Dr Reay has now 'retracted' his findings. So, basically, you've done a piece of research and you've now accepted there were faults.

72. So Reay did retract his original conclusions. One of the people who provided the evidence that said that those conclusions could be questioned was myself. However, we still come back to this same point that Karch is saying in laboratory studies you can't cause such large effects on breathing that it could be harmful or fatal, he's correct. However, my view would be that's in a laboratory study and in a laboratory study by definition we're not allowed to do things which would harm people. Therefore, I'm saying placing people in certain positions would reduce their ability to breathe and that would be a risk factor in potentially being harmed during the restraint in the real world.

73. At page 2, Dr Karch makes reference to studies performed in Canada. I have been asked to comment on this. Yes, the Canadian study, Hall *et al* (2012) was initially criticised on the basis that it lacked statistical power. What that means is that if you have something that happens very, very rarely, like the restrained deaths, you can easily say, "We've got a thousand people restrained one way, a thousand people restrained another, and nobody died, and there's no difference between the two ways of restraining people,". Statistically you then come back and say, "Well, yes, but it's so much an infrequent event there was absolutely no guarantee it was going to happen during that." Statistically we can't draw inference from that. They extended their work to include more cases. In that study, it was something like 60 thousand or certainly tens of thousands of police interactions, and they only had one death. I think the main conclusion you can draw - and I'm sure that would be consistent with the UK as well - there are huge numbers of police interactions and a very  of deaths. Because

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of that small number of deaths you can't conclusively say that it proves or disproves that prone restraint is a problem. The number one thing I would teach from that to students is: look how often the police restrain people and people don't die.

74. That begs the question is it possible to train people to reduce those numbers even further without making it impossible for policemen to do their jobs? Well, yes, it is. It is possible to do that. But I couldn't see that as proof that prone restraint isn't an issue. As mentioned, the evidence comes from both the real world and from laboratory studies. The laboratory studies have certain strengths and limitations. The studies from the real world have certain strengths and limitations. This fact that there are very, very small numbers of incidents is one of the things that makes it so difficult to study in the real world. In summary, I would not see that study as proving that prone restraint is either safe or dangerous. You can't draw that conclusion.

75. I am referred to Dr Karch's first report (PIRC-02526(a) at page 7. He is asked the question "What was "the physiological effect of (a), (b) and (c) on the deceased in combination in the circumstances of his arrest?". A) being the drugs taken by Mr Bayoh, b) being the effect of the CS Spray or PAVA and C) being the restraint. Dr Karch states in answer: *"I concluded Factor (c) is irrelevant as there is no proof that such a disease entity even exists. Factor (b) is similarly irrelevant as there is no evidence of toxicity present, and as there are many more convincing elements, in particular, all of the drugs as enumerated in Question (a). The inherent cardiotoxicity of these drugs, together with obvious pre-existing heart disease, just makes the probability of cardiac arrests even greater."* I partially agree: I agree with him about the inherent cardiotoxicity of these drugs. The area of disagreement is the complete exclusion of the restraint. If you made us write down what does the evidence say in terms of the actual findings, I do not believe that we would differ. That's a matter of fact. Where I think we differ is the conclusions that are drawn from those facts and that Dr Karch is binary about it: either it kills people, or it does not. My view is that there is evidence of effects on breathing, that in a laboratory are not sufficient to cause harm or death, but they are sufficient to increase the risk to somebody, and that's different to being binary.

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Sometimes there can be occasions where they increase the risk so much that they are literally the cause, but those cases are relatively infrequent.

76. So in the UK, one where that was clearly the case was the case of Mr Mubenga, the immigration removal case. To my knowledge, all of the expert opinion on that basically said there was no other cause of death. It was the restraint that caused it, but that is uncommon. That is not what you commonly find in most cases. In most cases there are other issues which could contribute. And drugs are one of those issues.

77. I'm asked about whether I'm aware of research in relation to the use of restraint disproportionately against ethnic minorities. Yes, there is a lot that is written on this subject. The problem with the research, best information is in statistics on death in custody. Other sources are sociological and political commentary as opposed to scientific research. I would need to think from the reading of the literature that ethnic minorities are disproportionately represented. If you wanted a scientific basis for that you would not be able to find it. You would need to be able to say that people of a certain race are "X percent of the population, and make up Y percentage of the restraint deaths". It is difficult to prove that restraint caused the death. What is the finding that determined restraint as a cause of death? There are different forums where a determination might be made, including Coroners' courts, criminal court actions, public inquiries. Then what definition is used, so trying to come up with a clear answer is difficult. So no scientific studies that conclusively prove this. I genuinely don't know how you would do this study. Essentially, in terms of what appears to be the cause, media reports are helpful but it is not a definitive and trustworthy scientific source that conclusively demonstrate that. So you can't just count the press reports. As an observation, I would say that there are more cases involving individuals from ethnic minorities than are proportionate per head of the population. For example, in Australia, individuals of aboriginal descent are over represented. However, I'm not aware of any good quality scientific studies which demonstrate the over representation of ethnic minorities in restraint death.

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78. I believe the facts stated in this witness statement are true. I understand that this statement may form part of the evidence before the Inquiry and be published on the Inquiry's website.

April 17, 2023 | 11:35 AM BST

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