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SHEKU BAYOH INQUIRY

The Sheku Bayoh Public Inquiry

Witness Statement

Dr Ralph BouHaidar

Taken by [redacted]

on Wednesday 26 October 2022

Witness Details

1. My name is Ralph BouHaidar. My contact details are known to the Inquiry. I am a Consultant Forensic Pathologist.

Professional Background and Qualifications

2. Bachelor of Science in Chemistry, American University of Beirut, Lebanon, 1995. Doctor of Medicine, Kursk State Medical University, Russia, 1999. Master of Science in Forensic Medicine, University of Glasgow, 2000. I was a senior house officer in histopathology Newcastle National Health Service Trust from 2002—2003 then a specialist registrar in histopathology from 2003—2004. Specialist registrar in forensic pathology Leicester National Health Service Trust from 2004—2008. Consultant forensic pathologist National Health Service Lothian, Edinburgh, since

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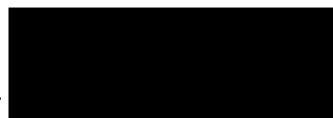
2008. Honorary senior clinical lecturer University Edinburgh, since 2008 then a senior clinical lecturer. Fellow: Royal College Pathologists. Training programme director for histopathology in Scotland and Associate postgraduate dean for diagnostics in the West of Scotland.

Double doctor post-mortem

3. Dr Kerryanne Shearer was the pathologist on call and therefore the lead doctor in the case of Mr Bayoh. My role was as the second doctor. I am asked what the role of the second doctor is, in a two-doctor post-mortem examination. In two-doctor examinations, Dr Shearer, as the lead doctor, will be doing all the dissections. I might give her a hand every so often – but the majority of my time, I'll be taking notes and discussing as we go along the findings the approach to the case, sampling, plan of action etc. It's a continuous discussion that takes place, and whilst I could be seen as the doctor in the background, I'm heavily involved in the decision-making with Dr Shearer. That said she's the one actively doing the work effectively, all in agreement with myself. If there's anything that I don't agree with, obviously I would discuss that with Dr Shearer at the time, which I would have. If there are any new views/ideas, etc., that I would like to be done, then we would have discussed these and came to an agreement at the time.

4. During, and by the end of, the post-mortem examination, we would have considered and agreed on all the above, otherwise it would be noted in our report that one of us wasn't in agreement on certain points. The exact details of Mr Bayoh's post-mortem would be quite difficult to completely recollect with any definite accuracy, but this is what we would've done. I've got a vague recollection that I might have assisted Dr Shearer in some aspects of the dissection, but I couldn't be certain. Any practical dissection I would have done would be agreed by both doctors.

Signature of Witness ……… 

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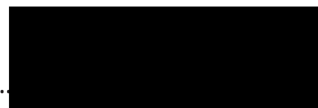
Background Information provided prior to post-mortem

5. I am asked if I can remember what background information was available to me before I started the post-mortem. As Dr Shearer was the person who had been involved mainly in the case, she would have been given a lot of that information either during a phone call or meeting, etc. I, as a second doctor, did not get involved in this part. However, prior to the examination, I would have been briefed by Dr Shearer in the presence of the police officers in charge of the case. If there was a Procurator Fiscal, they would normally be present. I can't remember at the time whether there a Procurator Fiscal present, but by the end of the discussion, I would have had a good understanding and agreement regarding what is happening and what are we doing.

6. This would normally start with a phone call from Dr Shearer, in which she would ask me to assist with the post-mortem and provide some of the background information. This would be also complimented by a further chat when I reached the mortuary. I doubt we had any major paperwork at the time as very often things would have been going very quickly. That's typical of homicides or suspicious deaths. A lot of that information would be available to us in this type of case, at least initially, through our debrief with the police. If a case is evolving, and police are still investigating, we are always aware that a lot of the information will come in later on.

7. We usually make a decision in a lot of these cases as to whether there is enough information for us to start or not. In the vast majority of the cases, we tend to have enough information because partly the police are very good at providing us with loads of information, in the very early stages, but also due to the fact that when we do an examination, we are usually taking that into consideration and trying to allow for other possibilities in case something changes. So, when you're doing an examination, you're not just purely using that information and targeting that. You always keep a very open mind, and you try and do as much as possible, also think of potential different scenarios and just do as much as possible so that you

Signature of Witness ………… 

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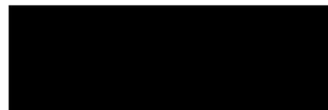
minimise the need to go back to the body. I remember very clearly that with Mr Bayoh- because I had involvement in the past with similar cases, either directly or indirectly –we needed to make sure that we do as much as we can and look at all the possibilities we can think of because this is the type of case that is extremely difficult and complex.

8. I am asked whether I was aware that batons had been used on the deceased. Obviously, my memory is a bit blurred because we had loads of information coming back afterwards, but I do recall batons being mentioned. Whether that's at the time we were doing the examination or later on, I can't recall but, generally, with these cases – and including Mr Bayoh's case – I'm confident that this is one thing we all would have thought about. In cases involving police restraint, etc., we consider possibilities such as batons, force applied to restrain the person, handcuffs etc. In many cases, it would be more difficult for us to see some injuries clearly on the skin, requiring us to do additional dissections. Even if we were told that none of the above has been used, we still consider these possibilities.

9. I am asked if I was told that CS Spray or PAVA had been used on Mr Bayoh. Again, with these types of cases, these are the questions we consider all the time. So even if we weren't told straightaway, we tend to ask these questions, "What has been used? How was the person restrained?" I can't recall if that information was available to us at the time, whether the police knew whether any of the sprays had been used or not, but we would have considered that hence why, we took swabs.

10. I am asked if I remember any discussion about the deceased's religion or the fact that he was Muslim. No, I don't recall that. I possibly did not know for a fact that Mr Bayoh was Muslim, or it might be that I've just forgotten. I can't recall if there was a request at the time to start the examination in a very short timeframe because of any religious beliefs. I would think that we started the examination as quickly as possible in view of the type of death and the fact that this was a two-doctor death in custody.

Signature of Witness ……… 

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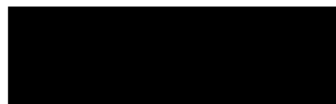
11. I am asked if I remember being advised about the height or weight of the officers that were involved in the restraint or even the number of officers that were involved. I don't recall being given any measurements of height and weight. We might have been given an idea of how many people were involved. Again, I know there were a few, but I don't remember an exact number. At the time of the examination this information might not be that relevant, but I would be interested to know more at a later stage.

12. I am asked if I remember seeing the police sudden death report. I don't think we had a copy of that. Looking at the initial post-mortem report (PIRC-01444), which is in effect a draft report, I don't see that written anywhere. However, the final version of the post-mortem report (PIRC-01445) suggests that we now have that information, which makes sense. The sudden death report is marked as being received on 6 May 2015 (COPFS-02899).

13. I am asked if GP records, and hospital records are ordinarily available before performing an autopsy. It depends on the cases and also the timeframe. So very often, we won't have these. In many cases, police seem to struggle to get GP notes, etc., if it's happening over a weekend because the GP surgery will be shut.

14. I am asked that if in my professional opinion was that I didn't have enough information to do the post-mortem, would I have waited until I had the necessary information. Yes, generally, again, particularly if I'm leading the case, and obviously even as a second doctor, I'll take the first doctor's views, but if I'm uncomfortable about the amount of information available to me, I will await until all the necessary information is available to me before starting the examination.

15. I am asked If I have any recollection as to who dictated the time and date of the autopsy. So normally it would be the Fiscal that would instruct the examination, and following discussion with the lead doctor as well as the different parties involved the date and time will be set to allow for all parties to be present.

Signature of Witness ……… 

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16. I am asked if I had any awareness of the issues around the identification of the deceased either from PIRC or from the police or the Fiscal and how Sheku Bayoh was identified. In the draft report, we documented the names of two police officers who identified the body, and we also mentioned that Mr Bayoh was fingerprinted too.

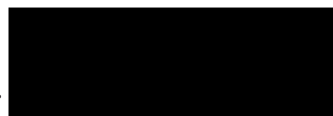
17. I am asked if I had any concerns about the means of identifying Mr Bayoh. I have no concerns regarding this. I am asked who makes the decision about how a body is identified. It's the Fiscal that makes that decision. I am asked what training that I have in relation to religious and cultural issues that require to be considered as part of an autopsy. There's a large body of literature available to pathologists to understand how to deal with the needs of different religions. And this is further accrued through attending lectures, engaging with the various professionals, personal reading, and other means.

18. In my years of practice, I have had to understand and deal with requests from various religious beliefs and has allowed me to also present lectures on my knowledge and experience to fellow doctors and trainees.

19. I am asked if religious requirements or practices is something that I would try my best to accommodate during an autopsy. Absolutely, yes.

20. With Mr Bayoh, I don't remember whether his religion has been discussed at any point, but I also equally do not remember if there were any requests. From memory, I don't think there were any requests made to us at the time.

21. I am asked what practical experience I have of performing an autopsy on a Muslim male and what considerations would come into play in a situation like that. I have done many examinations on Muslim males and females. Additionally, In view of my background and experience around the world I have been able to engage with various religions, and family requests allowing me to have a very good understanding of the various religious requirements.

Signature of Witness ……… 

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22. I am asked about facial dissection and in what circumstances would I carry this out. We don't carry out facial dissections on all our examinations. As forensic pathologists in Scotland we deal with all types of cases, so we deal with routine non-suspicious deaths, natural death, etc., and we deal with suspicious deaths. Generally, when there is any blunt force type of injury, altercations, restraints, falls, even sometimes direct injury on the face, I usually would consider and would do a facial dissection. This will assist us in identifying injuries in the soft tissues of the face as well as fractures that could very often not leave any external marks on the skin.

23. I am asked whether I anticipated that the family would want to view the body after the autopsy had taken place. Yes, during the dissection of any part of the body, we always have in the back of our mind the fact that the family will view the body and the importance of minimising the invasion of the body whenever possible. I am fully aware that in the vast majority of the cases that I do, the family will still view the body after the autopsy.

Post Mortem Report

24. I am referred to the initial post-mortem report that details the post-mortem is carried out on 4 May, which was the day after Mr Bayoh died. The GP notes and the hospital notes were not available. The background information includes that, *"Mr Bayoh reportedly engaged with the officers and a physical confrontation ensued, resulting in him being restrained to the ground, hand cuffed with leg restraints applied."* I am asked where this information came from. That information would come from the PIRC. Generally, this information is provided verbally, albeit in some cases we receive a draft report.

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25. I am asked why the use of CS and PAVA spray or batons strikes were not included in the initial post-mortem report. I assume that this information was not available to us at the time hence this is why it was not included. I am asked if the information about the baton strikes, and the PAVA hadn't been conveyed would I have done anything differently if I had fuller information. No, the extent of the examination we have done was to cover all possibilities to start with whether we've been given that information or not.

26. I am referred to the line "dark brown skinned male of heavy build" I am asked why the use of wording dark brown instead of black. This is a subjective description of the colour of the skin that we've seen. This is a pure subjective description of the colour of the skin, and I hope this has not caused any offence. It is a visual description as opposed to confirming race or ethnicity.

27. I am asked what is meant by the description heavy built. Mr Bayoh was definitely muscular from my recollection. Again, this is a very subjective way of describing the build. In no way are we trying to say he's heavy because he's obese. His body mass index is higher than what is thought to be normal, but body mass index doesn't mean much these days anyways because you can be very muscular, absolutely healthy, with a very high body mass index but that's your muscle weight not your fat weight in a way.

28. I am asked what the significance was of the liver being congested. Congestion of the liver is something we see fairly regularly, it could just be an artifact because of the pooling of the blood in the liver so it's just a post-mortem change that is not of any importance. It could be because the heart has been chronically failing. It also could be because of the acute events very quickly before they died where the heart failed and stopped and blood pooled in the liver It could also equally be an artifact of resuscitation whereby, you're pumping the chest and you're trying to move the blood around the body, but this is not very efficient.

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29. I am asked why Histology was instructed and what samples were retained for further investigations. Histology makes up one of the major parts of our examination on most, if not, all of the autopsies we do. Our training in pathology allows us to at least diagnose disease on two levels: one with the naked eye and one on the microscope. Histology offers as such an additional level of investigation of pathology and disease.

30. I am asked what the meaning of the term “artifact”. A post-mortem artifact is a change in the body that is not a genuine disease or pathology related change, and generally relates to changes taking place in the body as a result of the cardiorespiratory arrest for example or indeed decomposition.

31. I am asked what the term autolysis means. This is the decomposition of the tissues. When the decompose tissue is examined under the microscope, rather than decomposition we refer to it as “autolysis” and autolysis really means self-digestion.

32. The brain and cervical spinal cord were retained in their entirety for neuropathological examination. I have been asked if this is standard investigation. This is an additional investigation that we tend to do in specific cases, and we decide on whether we need to do an extra investigation depending on the circumstances and our findings. We would consider this in cases when someone for example has sustained blunt force injuries, restraint, certain drugs deaths, epilepsy, and other causes.

33. I am asked if toxicology being instructed is standard instruction. Yes, toxicology would become standard in these types of cases. We don’t do toxicology on all of our cases, but any questions for example regarding drugs, alcohol, etc. would require toxicology analysis.

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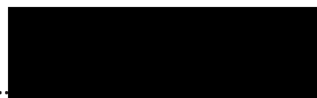
34. I am asked about the bacteriology testing. This involves a brain swab and a sample of tissue, and similarly virology involves is a sample of tissue being taken. Again, we don't do this very often but just to work out the cause of Mr Bayoh's behaviour; was the way he was acting drugs related? Or is it some other cause for example, inflammation and infection of the brain? It's very difficult for us to see that with the naked eye. So, we were looking at different ways to identify or basically refute that possibility by using additional modalities such as virology and bacteriology.

CT Scans and X-rays

35. I am asked why the examination of a skeletal survey and CT examination was later carried out and who made that decision. The post-mortem CT scanning service in Scotland was started by myself and colleagues in radiology in 2011. This however is still not fully funded, and we rely on availability of the hospital scanner to perform post-mortem CTs. As this is someone involved in a restraint and altercations, etc., and we had very little information about exactly what happened to him at the time and in view of the fact that autopsies can miss small fractures of parts of the vertebra, parts of the rib, for example. I suggested that we needed to do a CT scan.

36. As noted, it can take some time to get a slot available for us to do an after-hour scan. Now I don't recall whether that the reason the scan took place purely because of this fact (and it's very likely it is that because we had to do the scan after the post-mortem) and potentially coupled with the fact that there was quite a big rush initially to do the post mortem very quickly with PIRC and fiscal involvement, we probably had no choice other than just to carry on with the post-mortem knowing that we will be able to CT scan later on.

37. I am referred to the appendices to the final post-mortem report. At page 29 to 32, there are two letters from the Department of Clinical Radiology. Both letters are dated 4 June 2015, and both refer to the date of radiological examination as being



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13 May 2015. The first letter described a CT scan, and the second letter described a repeat x-ray examination. I am asked would that be normal to do both at the same time. We normally initially go for one of the two, usually CT because that's the better of the two. However, I've got no recollection of this and, I don't know if I had any direct involvement. There are two possibilities I can think of: either CT wasn't available and they went for an X-ray but then CT became available and they did the two at the same time or, more likely, because of the CT being done after PM and consequently may have been a bit difficult to interpret, and also of the fact that CT is not always the best modality for rib fractures, they probably went for an X-ray too.

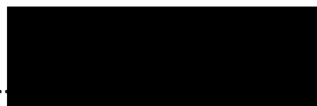
38. I have been asked what the difference is between a skeletal survey and a CT scan. A skeletal survey is obtained by using the X-ray machine to take one picture, effectively, of a part of the body. So, for every bone you get one or two pictures. A CT will take in one setting hundreds of pictures of every part of the body. The CT is an X-ray machine that takes huge number of X-rays within seconds which makes it a very much better modality to look at bones and the body than an X-ray.

Fractured Rib

39. I am referred to the final post-mortem report at page 9, which states:

> *"Soft tissue overlying the front of the posterior part of the left first and second ribs (just adjacent to the thoracic spine) was removed and revealed focal possible soft tissue haemorrhage measuring 0.5 cm in diameter, overlying the 1st rib. Underlying this, there appeared to be a fracture through the rib."*

I am asked about the uncertainty of the language here. After death, blood would be pooling in different parts of the body. This section describes when we went back to the body following the results of the CT scan. Because Mr Bayoh's body has already been examined, and due to the passage of time, we considered whether this was actually a haemorrhage, or just an artefact of the dissection. We

Signature of Witness ………… 

also questioned whether this was the focal decomposition of that area, or not. And equally, we're saying the same about the fracture of the rib.

40. I have been asked about the fact that radiology isn't identified as one of the further examinations needed in the initial post-mortem report. I suspect that this was just an omission from the report. The skeletal survey initially was done on 6 May. When I send an email like that, I usually contact the radiology department the day before because the body needs to be moved from the city mortuary in Cowgate to the hospital, and that transport is done through the Fiscal using the undertakers with involvement of police, who will be usually escorting the body.

41. I have been shown a report from Dr Walker dated 23 June 2015 (PIRC 04062). I have no memory of having seen this report. I have been asked whether there is anything in that that changes any of your conclusions in the post-mortem report. No, it doesn't. The report discusses the side effects steroids being hypertension and cardiovascular disease, but this is not relevant to the cause of death.

Histology

42. Page 13 of the final post-mortem report states *"The heart was mapped and the sinoatrial (SA) node and atrioventricular (AV) node sampled."*. I have been asked to explain what mapping involves. in order to avoid retaining the whole heart, and following agreed protocols we sample various heart regions very much like cardiac pathologists and we map these in our slides to be able to identify the various regions under the microscope. We take a slice from the mid-part of the heart, and then we effectively take blocks from that slice which are recorded on that map of the slice, which is a photograph of that slice from the heart so that we can identify which section we've taken is from which part of the heart. We also take extra samples from the heart that are required like we did on that occasion and all that

is recorded on that little diagram so that when I look at slide, let's say "X," I have from the heart, I know exactly from which part of the heart it's coming from.

43. At the same page, the report states that, in relation to both the SA Node and the AV node, there was "no obvious significant abnormality." So, we're effectively looking for pathologies and we can't see any pathology in the heart. We tend to use wording such as "No significant pathology" or "No significant abnormality" as a way to say there's nothing that we can see that is also relevant to the cause of death or could play a role in death.

44. In relation to the lung histology, the report states: *"There are extensive congestive features and areas of pulmonary oedema. There are widespread areas of subpleural chronic inflammation and pigment-laden macrophages."* I am asked to explain what this means. Congestion means pooling of the blood in the lungs and we're seeing that under the microscope. Oedema is fluid in the lungs which is, again, is a very common finding in people who die. Particularly where CPR has taken place. The chronic inflammation is exactly what it says, there is inflammation that is chronically present under the surface of the lung – it's a subpleural (sic)– and the pigment-laden macrophages are inflammatory cells that are full of pigments. These are the pigments that have been inhaled but the body can't digest them. So, we're just describing findings there of artefacts from the death and the resuscitation, and just generally some chronic minor disease happening in the background. I can't remember if he was a smoker or not, but that would fit with potentially smoking in the past.

45. I refer to the entry, at page 13, in relation to the thyroid gland, which states: "*The two sections taken were reviewed by an Endocrine pathologist. Although autolysis and only two sections being available limits assessment, the appearances would be in keeping with a multi-nodular goitre. There are very focal areas of chronic inflammation but no evidence of malignancy."* I am asked to comment on the significance of this. It's a pathological description of a bigger thyroid or an abnormal

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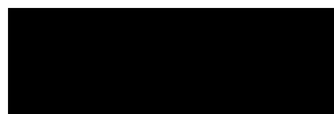
thyroid gland. Pathology will not be able to tell whether that enlargement is because the gland is now hyperactive or hypoactive. Or whether it is normal.

46. In terms of potentially underactive or overactive thyroid problems as having any significance in relation to his death in view of the lack of any history of him having thyroid problems, etc. which could affect the heart rhythm, it would be difficult to actually comment further on a potentially incidental finding in the thyroid.

47. At page 14, in relation to the histology of the left first rib the final post-mortem report states: *"A fracture is confirmed but there is no evidence of obvious associated haemorrhage and a special stain for iron is negative."* I am asked how this fits with the earlier reference to the possible soft tissue haemorrhage overlying the fracture. This redding of the tissues that we are seeing is probably not haemorrhage because we can't see red cells under the microscope. What happens is when a haemorrhage is there for some time, it gets digested by the tissues of the body and then iron is extracted from these cells. The special stain for iron can further help but we couldn't find iron. Maybe there's still some genuine haemorrhage but we're not 100 per cent sure still, but most of it seems to be a fracture with no iron available to see.

48. I am asked about the iron stains and asked if it's correct that it would have shown up the presence of blood if there had been blood present, and the negative result suggests then that it wasn't a haemorrhage. When we're looking at the acute haemorrhage, we're looking at red blood cells. If it's something that is less acute – it's been there for a day or two or longer – then this is where we start seeing the iron. If the haemorrhage occurred let's say two hours before death you are still unlikely to see any iron because it's too fresh, but you'd expect to see the haemorrhage.

49. I am asked if I knew whether the family would have been aware that the brain had been retained. There's a form we fill in that is scanned and emailed for the Fiscal to formally get their consent regarding the retention of any organ and then this

Signature of Witness ……… 

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follows the organ as it moves through the various stages of examination and return to the body.

50. So, if that form has been filled, then the Fiscal would be aware of it in writing and they would inform the family I have access to a copy of this form (WIT-00052). The form was initially dated by Dr Shearer, 4 May, signed by Bernard Ablet, the Procurator Fiscal, on the 4th. Then signed by the neuropathologist, Prof Smith, on the 6th to say that he examined the organ. Then the organ was returned to the body by one of our technicians, Vickie Squire, on the 8th. This was acknowledged by the Fiscal, Faith Miller, on 14 May and signed by Dr Shearer to say it's all done on 8 May. In the instruction sheet form, from the Fiscal which I found a minute earlier, it says that "The PM, was instructed by Bernard Ablett" and then there's a note at the bottom saying that he was present at the autopsy.

51. I am asked to confirm why the post-mortem report includes reference to heart issues. We looked at various possibilities of heart diseases. There's always that possibility that the deceased has got an inherited type of heart diseases that we cannot identify unless we examine the heart in detail.

52. I am asked what sort of mechanism during restraint could have caused a fracture of the first rib. The first ribs are really very well protected. So usually, it's quite difficult to fracture these and generally if you do have a fractured rib, people tend to be involved in major incidents, car crashes, jumping from buildings, falling from heights, etc. There are talks sometimes that resuscitation could cause fractures of the first rib. Equally, if someone has been involved in an altercation, it's quite difficult to fracture this and we do see lots of people being involved in fights, etc., who very rarely do have fractures of the first ribs. But then if it was the result of blunt force injury, because of the way it's well protected, etc., you'd expect to see more damage around that area which we're not seeing.

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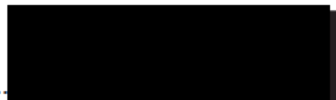
53. If Professor Freemont is saying it's genuine – and we have to follow his advice and views because he's the expert on the subject – then, mechanisms of causing that could very well be an injury of some sort on the back of the body, be it a direct blow or a fall, falling on some protruding part of the road for example. As I say, a pavement, or the side of a table, or the side of a car, could potentially cause that. So, it's quite difficult to tell but, from our perspective, it didn't seem to have caused any major damage internally, or any organ damage, to be of significance. I think in a way, we're unable to completely tell what the mechanism is but, equally, we're not thinking it's major or has played a major role in his death is what I'm trying to say here.

54. I am asked if I am able to comment on what type of pressure or force would be required to fracture the first rib. It's quite difficult to tell but my experience with these rib fractures, as I said, they tend to happen in major injuries but with major injuries, you see a lot more around that area and we didn't. So, this is why I am keeping an open mind about this fracture. The fact that it's at least two hours old raises the possibility that he could have fallen beforehand and injured it.

55. I ask to confirm how long it was from when Mr Bayoh was restrained to the time that he died, and I am told it was about an hour and a half. Again, dating fractures is not always a 100 per cent accurate science, but if we're considering the age is two hours or beyond that then it doesn't really fit with this. Is it something that he's sustained whilst he was potentially under the influence of drugs? Did he fall somewhere? Did he trip somewhere and then cause that fracture?" And if it did happen at the time of altercation, is it a result of resuscitation?

56. I am asked if I know whether Sheku Bayoh died from a fatal cardiac arrhythmia that could have been a result of taking MDMA and, if he didn't, what's the difference between a fatal cardiac arrhythmia and the cause of death in this instance. MDMA we know can cause arrhythmia. The only difficulty is that at autopsy, we cannot diagnose an arrhythmia, so we cannot find changes that will allow us to tell if there

Signature of Witness .... 

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was an arrhythmia in the heart or not. This can be identified during life if the person's been connected to a cardiac monitor.

57. So effectively, what we're trying to say here is that Mr Bayoh's had a drug in his system that is known to cause death, and its presence, in association with other factors, could have well played a role in his death, but we're not able to 100 per cent demonstrate that, and this is something we do quite regularly with people who die from different scenarios, but they've got MDMA onboard. So, we do use that same kind of approach and our understanding of what it does to them and use that as a cause of death.

58. I am asked to clarify if that enough Alpha-PVP could have caused a fatal cardiac arrhythmia although you can't see that in a post-mortem., the same approach applies to Alpha-PVP also, to be honest. It's less known about and less researched than MDMA, but there are already articles and evidence to show that it will cause death, so hence why, very much like MDMA, we're considering it as important to the cause of death.

59. I am asked to compare the fact that that Sheku Bayoh had a friend who had also taken drugs and may have taken the same substances and didn't suffer any ill effects. What isn't known is whether there was any dosage difference between the two, and his friend wasn't restrained by the police, so you've got some potential dosage differences, circumstance differences. Dosage is important in many of the drugs' toxicities, although in certain drugs like MDMA, it might not be that important, and also the circumstances are important. Particularly these specific circumstances we're talking about here, restraint, etc., and our knowledge and experience with restraint death is that many of these people who die in that scenario would have had drugs onboard, and we still do not fully understand how everything interacts together and the person dies. The main thing to also mention is that a lot of people take all sorts of drugs on a daily basis, and they don't die, and that includes MDMA and other drugs, potentially more serious, more less

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common drugs like we've got here, and we get many of them who take MDMA and die. Ignoring the circumstances, and ignoring the fact that there might be other factors involved, and let's say Sheku took MDMA and his friend took MDMA, there is still a possibility that one or both of them could have died even if they hadn't had any involvement with the police.

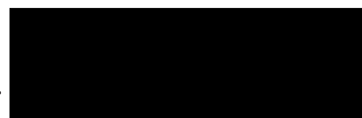
Report of Dr Steven Karch

60. I have had sight of the report of Dr Steven Karch (PIRC-02526(a)). I have been asked to comment on the following paragraph, at page 4:

> *"High doses of nandrolone elicit cardiotoxic effects including cardiac remodeling and injury. There is also laboratory evidence that they m[a]y provoke arrhythmias. As myocardial remodeling of both ventricles was apparent on my examination of the heart, it seems only reasonable to conclude that nandrolone contributed to the process, as did all of the other stimulant drugs. There is also evidence that, by methods yet to be determined, nandrolone facilitates the occurrence of myocardial arrhythmias, the apparent cause of Mr. Bayoh's demise"*

61. Mr Bayoh did not have a heart disease that we can see histologically. I am asked if it is my understanding that nandrolone could cause cardiac arrhythmia. Many drugs could cause cardiac arrhythmia. When it comes to particular drugs and other substances, sometimes we do not have enough scientific evidence to always back us up, allowing for various opinions and possibilities. I can't fully discount the fact that nandrolone could potentially cause arrhythmias, but I doubt this is what potentially could have happened.

62. In a way, it's not the substance itself that I'm only concerned with, it's actually how it could have interacted with other substances. So even if it doesn't have a risk of increasing cardiac arrhythmias, could it have somehow interacted with the other drugs to increase that, something that we do not know about? That's why we

Signature of Witness ……… 

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always leave room for these possibilities, because we don't have a good enough body of evidence to make us 100 per cent sure about what's happened here.

63. In relation to the CS Spray and PAVA spray, at page 16 of the final post-mortem report, we concluded that these did not appear to have an immediate effect on Mr Bayoh. The report continues:

    "From the literature available, it would appear specific side effects include bronchospasm and laryngospasm and patients with pre-existing respiratory disease (which did not appear to be the case here) are more at risk from severe effects."

    I am asked if a pre-existing respiratory disease would include sleep apnoea. We're concerned more about lung diseases along the lines of asthma, emphysema, rather than sleep apnoea. Sleep apnoea generally doesn't cause any major effects during the day. It's usually at night-time where things are problematic, and also involves the mechanics of breathing rather than purely a lung problem.

64. I am asked whether seasonal rhinitis would be something that would be a respiratory condition that I'd be concerned about. Again, I doubt that would be of any importance. I think what is also quite interesting from our perspective when it comes to these things is, what sort of symptoms did he have when he was sprayed with all these substances? Generally, when people suffer the effects of these substances that could potentially be problematic or fatal is when they start having these chest symptoms. In my understanding, he actually didn't react to any of these substances.

65. I am asked whether Sheku Bayoh being on the ground and losing consciousness a few minutes after being sprayed was a delayed reaction or would I have expected it to happen the moment of him being sprayed. It's possible for him to have some other later effect, etc., but yes, generally I would have expected usually a pretty quick effect, but also effects on the lungs or some form of complaint from being

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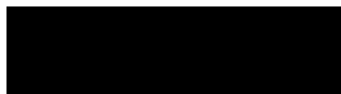
unable to breathe or his breathing changing or whatever, and none of that has been described. So, it's difficult to completely rule it out. But based on what the information we've got at the moment, there are no findings to make us think there's a major role of these substances.

66. Continuing with the final post-mortem report at page 16, I am referred to a paragraph stating the possibility of excited delirium syndrome has been considered in this case, and it is noted to be a psychiatric and not a pathological diagnosis. I am asked to comment on this. Excited delirium is not considered a pathological cause of death but is a set of symptoms or behaviours. it is not something that is now used as a potential cause of death; it's more of a set of behaviours that people are describing that is commonly seen in restraint type of interactions, but we have now completely moved away from that, and then we tend to use the complex wordy cause of death, whereby we describe the events rather than give them a specific name, but I think only some practitioners in some countries were still using that term, including America. We know that all these together seem to cause a fatal outcome, but we still don't understand how to separate the different roles and different importance of the roles of the different substances and conditions there.

67. At page 17 of the final post-mortem report, we discuss the restraint and the possibility of positional asphyxia and mechanical asphyxia. I have been asked if a combination of positional and mechanical asphyxia is possible. Yes, absolutely. With petechial haemorrhages, we're now looking at the effects of what asphyxia could cause, but asphyxia as a general term does not necessarily mean physical asphyxia because of compression of the neck or the chest or whatever. We tend to see petechial haemorrhages in hangings and restraint deaths, if someone's chest has been compressed, but equally we see that someone who dies from a heart attack or a pulmonary embolism, a clot around the lungs or resuscitation.

68. I am asked if the drugs in Sheku Bayoh's system could have caused the cardiac arrest. Again, it's quite difficult to be absolute here about one part of the equation. The drugs might have caused the arrhythmia, and arrhythmia doesn't mean

Signature of Witness ……… 

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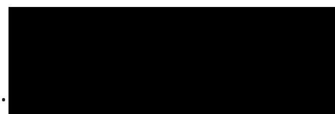
complete stoppage of the heart, but enough disturbance of the heart not to supply the brain particularly with enough blood to make him go into that kind of hypoxic damage. And, in fact, as you see with the neuropathology report, although now we're looking at him after resuscitation, the passage of time, we're not looking at him within these few moments, you can already see that there is enough ischemia happening in the brain. The brain cells are dying because they are not getting enough blood.

69. I am asked to confirm that what I am saying is that the drugs could have caused respiratory arrest in the sense that a heart arrhythmia in and of itself could have resulted in enough blood not getting to the brain. Yes. It starts with the heart, but the heart doesn't completely or fully shut down, but enough to shut down the breathing. I am referred to the toxicology report dated 12 June (COPFS-02253(a)). This details that the level of Alpha-PVP found in the post-mortem blood is four times higher than that found in the hospital. I am asked what the explanation for it is. That probably is a question best answered by the toxicologist, not by us.

70. I am referred to page 2 of the toxicology report where it says *“It's been reported in drug seizures across Europe since April 2011, and there are a few publications which report toxicity in individuals both surviving ingestion and in fatalities. It's not clear from the literature available what effects would be expected from specific blood concentrations.”* Yes. So that's, again, toxicology, just writing in general because they don't tend to fully interpret the findings for us. They just give us an overview of what is available and it's up to us to make up what we need from that and what we think is appropriate.

71. I am asked to clarify that the fatal range or the fatal dose of Alpha-PVP isn’t known. Yes, that’s true. I am asked if I am aware of any sort of update on that since 2015, whether there is a fatal dose for Alpha-PVP that I knew of. No, no, I'm not aware of anything lately.

Signature of Witness ………… 

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72. So just from the results in the toxicology report, it appears that Sheku Bayoh was at the lower end of what would be a potentially fatal range for MDMA use. I am asked if we can exclude a MDMA overdose as Sheku Bayoh's cause of death. I can't really fully exclude it. As explained, it's likely a combination of everything that we've got here that is important, rather than just specific levels or specific events, hence why we went with a combination of all these diseases.

73. As the toxicology report says all other analyses were negative. I am asked to confirm if they would have tested for alcohol. Yes. So, if you look at page 1 in that table and you see at the end of it, the last one, it says, "Analysis completed." They've got the analysis for alcohol in the post-mortem blood and also the hospital blood, the last one. They've done that too, so they can find it in both samples.

74. I am referred to comments made by Dr Shearer that say "Discussed with Dr Robert Weir. If no previous neurosurgical intervention, i.e., shunts, it's very likely that it's post-mortem contaminants." I am asked if it is quite common for microbiology reports to show that up. Yes. So literally as soon as the person dies, you've already got the bacteria, which is already present in our body, particularly the bowels, etc., that start growing. Then also because your defences are shut down, bacteria can creep from outside too. So that results in lots of new bacteria appearing in most if not all our samples that we send to microbiology. Very often they tend to be bacteria that are not usually seen in someone who's alive with an infection.

75. In relation to the radiology report, it mentions that *"the levels of decomposition meant that meaningful images could not be obtained and the patient subsequently then attended for a CT examination".* I am asked in what conditions was the body stored following the autopsy, and whether the degree of decomposition was within expected parameters for someone who'd been dead for that length of time. Similar to histology, with the artifact we tend to see on the body and also on the microscope, post-mortem CT is also affected a lot by decomposition. This is because very quickly after death, all these gases start forming, and gases are one

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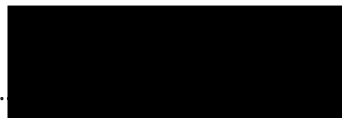
of the things that radiologists look for during life in patients, but they're everywhere in a decomposed body. These gases could mask certain findings because they're covering certain areas that normally aren't covered if the body is not decomposing.

76. The body normally would have been refrigerated after death. Again, sometimes if we know that the body is going to be with us for a bit because there'll be more work to be done, etc., then usually decisions are made to freeze the body to make sure that the temperature is a bit lower, and the body can remain in good condition for a longer time. I don't know what was being done on that particular occasion. I can say that I'm not aware of any problems with our refrigeration at the time, so all I could say is that it would be just the general type of decomposition you'd expect from a body that has been examined because we've examined them and that has, to some extent, sped up the decomposition too.

77. I am asked if the degree of decomposition impede the CT examination. It does, yes. It makes structures look different to the radiologist, but radiologists also learn how to ignore or understand these things and how to interpret them.

78. I am referred to the radiology report, at page 29 of the final post-mortem report, which says *"There is a particularly linear distribution of air within C7, extending from the vertebral body to posterior elements bilaterally. Although this may represent artifact, given the rib findings detailed below, direct visualisation is advised."* and *"a well-defined linear lucency and the medial posterior aspect of the left first rib proximal to its junction with the first thoracic vertebral body."*

79. I am asked what "direct visualisation" entails. The radiographer looked at the pictures. There's lots of gas. She's unable now to ignore that fully, and she is unable to be 100 per cent sure that there's nothing behind these gases that could be pathological. So, basically, she's advising us to go back to the body and examine it, which we did.

Signature of Witness .... 

80. I am asked to clarify if the well-defined linear lucency that's described in relation to the first rib, is a description of the fracture. Potentially yes. She was trying to say there, "I'm finding something that is abnormal. I'm not 100 per cent sure that's not artefact but I am sure enough that there might be something there that is worth your time to re-examine".

81. I am asked about if the reference to a post-mortem chest X-ray is just part of the skeletal survey. Yes. I am asked since the X-ray didn't show a fracture of the first rib, is there any significance to that. No, again this is why the two modalities are being used – the CT and the X-ray – and interchanged. The radiologist, would look at the two, would compare the two, etc. I am asked if a CT scan more easily shows a small and potentially hidden fracture like that. Potentially, yes.

Neuropathology Report

82. The neuropathology report by Professor Colin Smith is appended to the final post-mortem report at page 20. It is dated 20 May 2015. The report states:

"Neuropathological examination has demonstrated changes consistent with an evolving global ischemic brain injury. There is no evidence of significant traumatic injury to this brain and no infectious disease such as meningitis or encephalitis. No natural disease is noted to account for death. The changes all appear secondary to cardiac arrest with resuscitation and short survival period."

83. I am asked when the brain injury would start and how long would that evolution be occurring prior to death. So, again, this is a question for a neuropathologist. That said I think what the neuropathologist is describing fits with someone who potentially collapsed, stopped breathing, and had arrest, and had a period of resuscitation because with resuscitation, what you're doing is you're recirculating blood into the different tissues but not in a good way. So, it's not always as effective as when the heart is working, and that sometimes could help the brain a bit but

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also equally could make the brain alive enough to react to the starvation of the oxygen, and that's what happens.

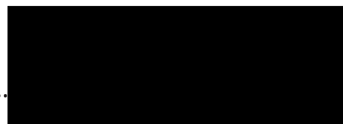
84. I am asked if a global ischemic brain injury, is that essentially where the brain is starved of oxygen. Yes, and it's affecting the whole brain. The global means the entirety of the brain.

85. I am referred to the supplementary toxicology report date 23 October 2015 (COPFS-02382). The report is in relation to checking the blood for caffeine. I am asked from the conclusion here that caffeine played no part in Sheku Bayoh's death. That's correct.

86. I am asked what experience I have of sickle cell disease and sickle cell trait. So, I obviously read a lot about it – articles and studies at the time – but also had a couple of cases over the years of sickle cell trait cases. I am asked if I considered the possibility of sickle cell disease or trait at the time of the post-mortem. I don't recollect exactly what we discussed. I've got a vague recollection that we did discuss this, the two of us, and we decided that since he's not known to have the disease, and then also the fact that with sickle cell trait, the likelihood of dying or even having a crisis is less common, and the histology wasn't impressive from our perspective, we didn't pursue that.

87. I am referred to Dr Soilleux's report (COPFS-00031) at paragraph 3 where her original opinion on cause of death is that: "*Most likely the death occurred due to a combination of restraint… and the presence of significant levels of MDMA and Alpha-PVP*". At paragraph 67, it is stated that, "*restraint may have led directly to asphyxia… or precipitated an abnormal heart rhythm as a consequence of the very significant self-induced physiological stress due to the struggle put up by the deceased*." I am asked if I agree with her summary. Yes, I agree with her summary.

88. I am referred to Dr Soilleux's second report (COPFS-00039) where she revises her opinion based on the results in relation to the sickle cell trait. At paragraph 13 she

Signature of Witness ……… 

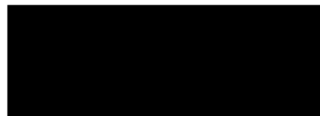
says, *"sickle cell trait gives a very coherent explanation for the sudden death. It is therefore extremely unlikely, although not completely impossible, that a channelopathy affected the cause of death."* I am asked to confirm if the channelopathy is a kind of genetic heart conditions. Yes, it is.

89. I am referred to paragraph 14 of the report which says:

> *"On balance I think that positional asphyxia was unlikely due to the short time period between Sheku Bayoh's contact with the police and the commencement of his unconsciousness, and (b) the fact that the sufficient other contributing factors to death were known to be at play for death to have occurred as a consequence of these contributing facts and the absence of any positional asphyxia."*

I am also referred to paragraph 59 of Dr Soilleux's original report (COPFS-00031) where she puts forward two alternative scenarios The drugs and struggle would have significantly increased the risk of a rhythm abnormality or, alternatively, asphyxia. I would favour the first of the two scenarios. In other words, the drugs, and the struggle with the additional contributing factor of sickle cell trait." I am asked what for my comments on this. This is what I feel that requires a bit of discussion. If she's saying that sickling of the cells and the trait is effectively a contributory factor then yes, I would agree with this but as to where it would fit in the cause of death and how important it is, I'm not really sure what I would do about that.

90. With the latest changes in scientific evidence, with the views particularly at the moment across the pond and how people are looking at it, which hasn't yet come in fully to us here, there's less and less weight put on these types of changes. So it might be that I would have put it in the cause of death either under two or maybe something along the lines, "Sudden death in a man intoxicated, etc. with all these things, and known to be a carrier or has got the sickle cell trait," or something like this.

Signature of Witness .... 

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91. Clearly, at the same time, we've got all the forensic pathologists including us, you've also got Professor Mary Sheppard as a cardiac pathologist looking at the heart, you've got Professor Colin Smith looking at the brain; so quite a lot of different experts, and none of them has actually mentioned the sickling, or were worried about the sickling. Red blood cells do sickle anyway in people who die -- and who don't carry the trait. People who have got the trait can have some of that sickling too, particularly they are under stress prior to death, but that doesn't mean that sickling was the reason of their death. It's an outcome of what's happening to them rather than reason for them going into hypoxic damage. Of course, it could still be the reason, as Elizabeth Soilleux and Sebastian Lucas are saying, but it could also the other opinion.

92. The other thing that people have talked about, and continue to discuss, is that by looking at the number of sickle cell in a couple of samples from histology, from the various organs, this could potentially not be enough to extrapolate how much sickling has had on the entire body. So, if you're seeing, what people are describing subjectively as more than I expect to see of sickling in these samples, is that enough to allow you to extrapolate all that has happened throughout the body?

93. I am asked from what I have said previously said if Sheku Bayoh could've died a combination-- from one or the other of the drugs that he had taken. Yes, it's very difficult for us to categorically just draw a line between all these different factors. Particularly with cases of restraint because there's also an element from, other people being involved in this. So, the drugs have played an important enough role for us to actually consider them to be significant and, as such, appeared in the cause of death.

94. I am asked if it would be right to say that that the drugs materially contributed to the death. Yes, we are of the opinion that the presence of the drugs has played a significant role in his death, hence why it's in the cause of death.

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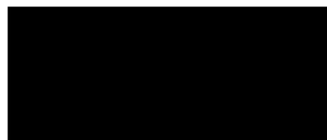
95. I am asked if similarly, whether the restraint and struggle either caused or materially contributed to the death. Yes, from our understanding and experience and knowledge of what happens in cases of sudden death whilst involved in a restraint– the combination of the drugs and the restraint are always present in causes of death like these. So, "It's a death in a man who has got the drugs whilst being restrained." So what we're trying to say there that, whilst the restraint is important in the cause of death, because it's one of the factors that we tend to see in this type of death all the time, we cannot completely say that the restraint has caused his death on its own, in a way, the act of restraint did not appear to cause enough damage to his body to cause on its own his death, but the fact that this was combined with someone who's already been intoxicated, the risk of death is increased.

96. You can in a way also say the same about the drugs. Someone with these levels could have survived and had no problems whatsoever and it might very well be that Mr Bayoh, has taken MDMA and Alpha-PVP in the past and had no problems whatsoever, but it's now with that combination of all these factors that is the most important part.

97. The two factors are definitely significant. They could very well be insignificant if they were separate, and that's why it's all appeared in cause of death. For clarification it is the physical effects of the restraint we are looking at. There was no damage to the body to cause his death. No major trauma, major injury, or fracture to cause death, but it's just that combination of restricting him and the drugs in someone who is already behaving in a very agitated way that actually caused that, hence why these cases are particularly difficult.

98. I am asked if I am in the position to comment as to what aspect of the restraint was so significant. No, it's quite difficult. In some cases we could identify major damage or effects of the restraints that play a role in death such as for example compression of the chest by someone sitting on the deceased let's say albeit we are aware that

Signature of Witness .... 

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this could also take place and leave no damage. We have no indication of this and as such quite difficult to be fully absolute.

99. I am asked if the Chair to the Inquiry made a finding that a police officer had leaned on Sheku Bayoh's back, would that be a significant aspect of the restraint. It could be, but that's only if we can have a good idea of where it happened, how it happened, and for how long.

100. It doesn't fall within my expertise to say whether the restraint is done in the right way, etc. There are experts who deal with these things, but pathologically there's nothing materially I can touch and see in a restraint in the form of in major damage, or trauma, etc.

101. I am asked on the balance of probabilities what was the cause of the haemorrhages. Petechial haemorrhages are generally considered as asphyxial signs but could very well occur in a variety of scenarios including true neck or chest compression but equally as a result of natural disease as well as resuscitation. It is quite difficult to be absolute about the exact reason behind these in the case of Mr Bayoh in view of the many factors that have or potentially could have occurred leasing to the formation of these. As a Forensic Pathologist, my opinion must be grounded in the evidence, and based on the evidence I have seen, I don't think I can draw a line and say 'this is what caused the petechial haemorrhages', even on the balance of probabilities.

102. I am asked on the balance of probabilities if I could say whether a degree of asphyxia was present. Yes, but that's to define asphyxia not purely as caused by the compression or the restraint. It could be also asphyxia because his heart or lungs stopped working. So, yes, there could be a degree of asphyxia and then, invariably, in most if not every single death, asphyxia does occur because the heart stops pumping, oxygenation stops, etc., pulse disappears, so that happens.

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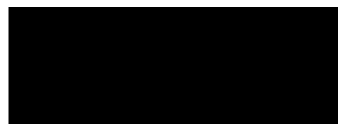
103. I am asked whether I could say if sickle cell trait caused or materially contributed to the death of Sheku Bayoh. I'm open to suggestions but at this stage I think it is a factor, and potentially worth mentioning. It's something that is of importance, but whether it warrants the same importance as the drugs and the restraint is something I'm not 100 per cent sure about.

104. I am asked does it have sufficient weight that it’s more than something that should be ignored. The presence of the sickle cell, whilst arguably could have added a bit more weight to what's happened there, it's absence could not have stopped his death is what I'm saying there. That's where I need to consider do I put it in the cause of death or do I not? I think the presence of sickle cell trait could arguably have had a minimal contribution to the mechanism of death albeit in its absence and in similar circumstances and autopsy findings, death could have still potentially also occurred.

105. I am asked but for the drugs would Sheku Bayoh have died. That's, again, a difficult question. As we discussed many times, it's the combination of this that is causing death. So, I can't actually pick out one of the many things that we've described and used solely as the cause of death. So, I can't really give a full answer to that one, other than say they all have to be together for his death to occur. That's how we understand these types of deaths to occur really.

106. I am asked on the balance of probabilities, what was the cause of the respiratory arrest. I think it's a combination of all the above including the drugs, the restraint. All of that would have caused him to go into some form of – potentially cardiac arrhythmia, as we said, that the police might have not detected – a respiratory arrest, and then from that onwards, things just kept on moving. So, again, it's a combination of everything really.

107. I am asked whether but for the restraint and struggle, would Sheku Bayoh have died. Again, it's a combination of the lot, and if he has taken the drugs, he could have died, but equally he could have taken the drugs and had no problems

Signature of Witness ……… 

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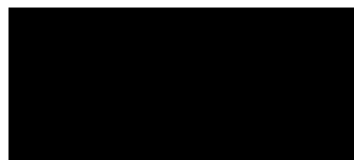
whatsoever. In a way you have to have that formula together, and whilst we do not know exactly what triggers the death – because I am confident many people have been intoxicated with so many drugs, have also been restrained, and have made it to the police station, to the court, and got back home and they're still fine: living – somehow, something happens with that combination, and it just triggers death and that's the end of it.

Dr Cary's Report – restraint and cause of death

108. At page 6 of Dr Cary's report (COPFS-00196) he states with regard to the cause of death:

> *"In terms of possible role for restraint, I support the opinions expressed that petechial haemorrhages in the eyes may indicate a degree of asphyxia, in this case most likely originating from compression of the trunk in the face-down position rather than any compression of the neck, for which there is no evidence. 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.*

I am asked for my comments on this opinion. I would say that's absolutely correct; I fully agree with that. So, what he's trying to say is it's just not purely the pressure exerted by, let's say, the police officers onto the body, it's also the fact that you're struggling against that will also cause an element of asphyxia because the person is trying to push themself a bit more than they should. That will also restrain your breathing or will put more demand on your body for oxygen, potentially leading to a degree of asphyxia.

Signature of Witness ……… 

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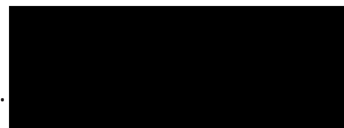
109. Continuing at page 6 of Dr Cary's report, he states:

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

I am asked to comment on this. This is what we're trying to allude to is that it's not just the pushing of the person's body down, it's what happens along with that, including the effects of resisting this and fighting back. So, yes, I think that's an even more explicit way of writing what we're trying to say: I'm in full agreement with that.

110. I have had sight of Professor Jack Crane's report (COPFS-00134). Professor Crane, at page 7, states:

"If, on the other hand, the deceased was lying on the ground either on his back, or face downwards, and pressure was applied to his trunk e.g. by a person or persons kneeling or sitting on him, then a serious and potentially life threatening degree of asphyxia could have been induced. In an Individual where cardiac instability had already been induced by drugs, then any form of respiratory embarrassment causing hypoxia would have rendered an unstable myocardium more prone to the development of a fatal arrhythmia (upset in the heart rhythm). Thus asphyxia could have been a contributory factor in the death if, at the time of his cardio-respiratory arrest, restraint of the type described above was taking place."

Signature of Witness ……… 

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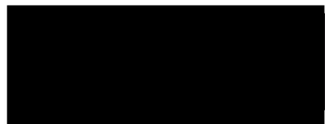
I am asked to comment on this. This is another additive factor, but a lot needs to be known about the facts of the restraint. If the restraint of the type described took place, how long that restraint lasted, and how long the chest was being compressed. What sort of pressure has been used? Was Sheku Bayoh reacting to this by pushing against it, which would make it worse generally? So, I can't exclude it. It's something that would have, again, in combination with all the rest that is happening, increase the risk of arrhythmias, which is part of the restraint that we talked about in the cause of death.

111. I have been referred to Professor Sebastian Lucas's report (COPFS-00084). I am referred to page 2 and 3 of his report:

> *"There is no doubt that the vast majority of persons with HbAS who undergo life's daily stresses do not suffer any such syndrome. The critical aspects are therefore the level of stress and accompanying elements such as dehydration, drugs, alcohol intake, muscle activity and body temperature.*
>
> *In evaluating the clinical pathology, the critical aspects are the amount of sicking of red cells and in how many critical organs. There is no rigid morphological case definition – we must acknowledge – that separates harmless sickling from harmful sickling: it is inevitably somewhat subjective and informed by the observer's previous experience. And it must be acknowledged that changes in the body's tissue post-mortem can contribute to sickling of red cells. But the quantity of sickling here tells me that this is much more than just post-mortem sickling; it happened peri-mortem as part of the death processes.*
>
> *In the BAYOH case, I am impressed by the quantity of sickling in the organs such as the heart, kidneys, liver, thyroid and adrenal – much more than I expect to see in the organs of those with HbAS who died of unrelated causes"*

Signature of Witness ……… 

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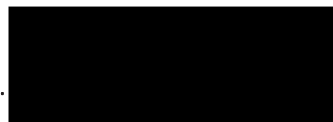
112. I am asked to comment on this. Professor Lucas is saying that there is sickling and that he accepts that this happens as part of the post-mortem artefacts, etc. but in his own views, this is way more sickling than he would have liked to see.

113. I am asked if I would defer to his views if he says that he thinks that it did contribute to the death. It's difficult to answer. It's a whole question of, "If he didn't have the sickle cell trait, would he have still died?" and I think the answer to that could possibly be also a yes. From my perspective I think it would be difficult to absolutely differentiate between abnormal cells that are the result of a crisis, or abnormal cells that were the terminal outcome of the death in someone who's got the sickle cell trait because he's been under so much pressure in addition to the effects of dehydration, drugs etc.

114. So, if that's Professor Lucas' opinion, I wouldn't disagree with it, but I'd find it a bit difficult to be scientifically sound to put it as the centre of the cause of death. Adding it to the cause of death is something that I would consider, but I wouldn't put as much weight on it as much as some of the experts is what I'm trying to say.

115. Continuing at page 3 of his report, Professor Lucas states an alternative cause of death of *"1a. sudden cardio-pulmonary failure 1b. sickle cell trait, recreational drug use, struggle against restraint ".* In relation to the three factors of sickle cell trait, recreational drug use, and struggle against restraint, he comments that *"I do not think we can quantify the contribution of the three factors and state with rigor that one is more or less important than the others. It is multifactorial."* I am asked to comment on this. I would say that the drugs and the struggle against restraint are of greater importance than the sickle cell trait. If I was going to write it in cause of death, I'd likely write it under number two, which means that this is a factor in the background that could have had some contribution, and, I could consider putting it in number one, along the lines of "sudden death in a man with drugs, under restraint, and known carry the sickle cell trait."

Signature of Witness ……… 

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116. The other thing is Professor Lucas has written "sudden cardiopulmonary failure." I think this is just a personal way of writing cause of death, my approach is to avoid terms as cardiopulmonary failure in causes of death.

Professor Sheppard's report

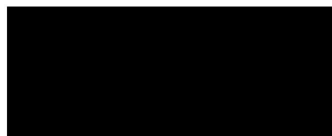
117. I have been referred to Professor Mary Sheppard's report (COPFS-00027), dated 1 December 2015. At page 5, she states in answer to the question of the physiological effect of a, b, c (i.e. the drugs, the CS/PAVA spray and the physical restraint) on the deceased in in combination in the circumstances of his arrest:

> *"The combination of a, b, c in combination can be linked to sudden cardiac death and I have published recently on this in the literature. The sudden cardiac death causes are usually multifactorial, and no one cause alone is responsible for the death. There is no evidence pathologically of any damage to the heart."*

I agree with this.

118. She also states "*The deceased had no cardiac abnormality identified at his death. However, this does not rule out sudden cardiac death due to an electrical abnormality of the cardiac channelopathies".* Again, I agree with this. We allowed for it in the cause of death by saying "sudden cardiac death". There are people who die from channelopathies, and we can't prove it, for example, a 20-year-old athlete who just suddenly collapses on the exercise field – no problems, no drugs, whatever – they actually are certified as "sudden cardiac death". There are lots of channelopathies we can test for at the moment – lots of genes they can look for – but new ones are continuously discovered.

119. 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.

Signature of Witness ……… 

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