Witness Name: Professor Christine Ann Lee

Statement No: WITN0644004

Exhibits: WITN0644005- WITN06440022

Dated: 3 December 2019

INFECTED BLOOD INQUIRY

WRITTEN STATEMENT OF PROFESSOR CHRISTINE ANN LEE

I provide this statement in response to a request under Rule 9 of the Inquiry Rules 2006 dated 5 September 2019 in relation to the witness statement of MAS who is Witness 1000 ("W1000").

I, Professor Christine Ann Lee, will say as follows:

Section 1: Introduction

1. My name is Christine Ann Lee and my address is GRO-C GRO-C My date of birth is GRO-C 1943. I hold the following professional qualifications – MA (Oxon) 1969, BM BCh (1969), MD (London) 1989, DSc (Med) (1996) FRCP (1990) FRCPath (1994) FRCOG (2010). A copy of my CV is exhibited (**WITN0644005**).

2. I have held the following positions as a haematologist for the following organisations and set out below my roles and responsibilities in each of these positions:

Dates	Position	Roles and responsibilities
September 1974 - June 1976	Registrar to Dr J Fielding, Department of Haematology, St Mary's Hospital	Laboratory and clinical; responsible in a district general hospital for the general haematology service. Six-month on call for emergency out of hours haematology including blood transfusion.
November 1976 - December	Senior Registrar to Professor PT Flute,	This appointment was under government scheme HM (69)6, known as The Women

1982 (part-time)	Department of Haematology, St George's Hospital Medical School. This included appointments at St James Hospital, Balham, Royal Marsden Hospital Sutton and South London Blood Transfusion Centre.	Doctors' Retention Scheme, which enabled female doctors with family commitments to work part time. Provision of haematology service and preparation for Membership of Royal College of Pathologists qualifying examination, achieved June 1982. During this time I provided some care for the small number of patients with haemophilia who attended St George's Hospital.
January 1983 - October 1984	Research Senior Registrar to Dr PBA Kernoff and Dr HC Thomas, Royal Free Hospital	Action Research Fellowship to study non-A non-B hepatitis in haemophilic patients. This work contributed to the dissertation for MD University of London awarded in 1989, entitled "The Natural History, Prevention and Treatment of Viral Hepatitis in Haemophilic patients."
November 1984 - November 1987	Senior Lecturer in Haematology, Charing Cross and Westminster Medical School and Honorary Consultant Haematologist, Queen Mary University Hospital, Roehampton, London	Single handed consultant haematologist responsible for the clinical and laboratory haematology service in the busy district general hospital, Queen Mary's University Hospital, Roehampton, part of Charing Cross and Westminster Medical School. I was also Senior Lecturer and provided regular teaching to undergraduate medical students.
September 1985 - November 1987	AIDS counsellor Richmond, Twickenham and Roehampton Health District	Responsibility for provision of HIV testing service using the newly developed test. Responsibility for providing education about HIV/AIDS to every secondary school within the borough of Richmond upon Thames.
April 1986 - November 1987	Honorary Consultant in Haematology Haemophilia Centre and Haemostasis	There was no patient contact and these sessions were to prepare research for publication.

	Unit, Royal Free Hospital, 2 sessions (1 day) per week.	
November 1987 - December 2005	Consultant Haematologist Haemophilia Centre and Haemostasis Unit, Royal Free Hospital, London.	Particular care for patients infected with HIV and hepatitis. Together with the director, Dr Peter Kernoff, I provided comprehensive care for people with haemophilia – the largest Haemophilia Centre in the UK with a patient population equivalent to the whole of Scotland and Northern Ireland. There was also provision of care for patients within the Royal Free Hospital who developed bleeding or thrombotic problems. There was a large anticoagulant clinic.
April 1991 - April 1992	Acting Director Haemophilia Centre and Haemostasis Unit, Royal Free Hospital, London	The Director was not able to work again for health reasons. Overnight I had to take responsibility for the whole Unit as acting Director.
April 1992 - December 2005	Director Haemophilia Centre and Haemostasis Unit, Royal Free Hospital, London	As Director I was responsible for service delivery and management of a staff of 70 including physicians, nurses, physiotherapists, laboratory scientists and counsellors. Although I was an NHS employee, I also conducted research. Relevant to this enquiry, 4 of 18 MD or PhD theses I supervised were about hepatitis: (1) Dr Paul Telfer 1991-4 MD University of Oxford 'HCV infection in haemophilic patients'; (2) Dr Helen Devereux 1992-6 PhD University of London 'The molecular biology of HCV infection in haemophilia'; (3) Dr Thynn Thynn Yee 1998-2001 MD University of London 'The side effects of

		therapy for haemophilia'; (4) Dr Esteban Herrero 1998-2001 PhD University of London 'The molecular basis of HIV and HCV interactions'.
January 2006 - present	Emeritus Professor of Haemophilia, University College London	The title Professor of Haemophilia within University of London was an honorary title awarded in 1997 for my work in haemophilia. There was international peer review of my contribution. It was the first professorship in haemophilia in the UK.
April 2007 -April 2010	Honorary Consultant Haematology, Oxford Haemophilia and Thrombosis Centre	Responsibility for women with bleeding disorders.

3. Since May 2010, I have retired from clinical practice.

4. I hold and have held membership of the following committees or groups relevant to the terms of reference:
   a. April 2001 – December 2005: Member of UK Haemophilia Centre Doctors Organisation
   b. 1996-2003: Chair of International Haemophilia Training Centres Committee, World Federation Haemophilia
   c. 1993-2005: Member of Medical Advisory Panel, Haemophilia Society of UK
   d. 1996-2000: World Federation of Haemophilia Executive with special responsibility for WFH/WHO relationship.

5. I also gave evidence as an independent expert witness at the Tribunal of Inquiry into the Infection with HIV and Hepatitis C of Persons with Haemophilia and Related Matters, which was chaired by Her Honour Judge Alison Lindsay in Ireland. The resulting report was published in 2002 and is available online.

Section 2: Background information regarding MAS

6. I make this statement on the basis of the medical records for MAS which have been disclosed to me by the Inquiry. These are incomplete but I have done my best to summarise the chronology

and respond to the issues that have been raised. I have also had access to the medical records for MAS' daughter, TS, which have been disclosed to me by the Royal Free Hospital.

7. MAS was diagnosed with von Willebrand's Disease ('VWD') at birth in 1968. This is an inherited bleeding disorder arising from an abnormality and deficiency in the quality or quantity of von Willebrand factor ('VWF'), the carrier protein for Factor VIII that is required for platelet adhesion. Patients with VWD classically experience nosebleeds and easy bruising. Women with 'VWD' may experience heavy menstrual periods and blood loss during childbirth. MAS had a severe form of 'VWD' (type 2M) experiencing repeated heavy nose bleeds with repeated hospital admissions.

8. The treatment for 'VWD' was formerly with cryoprecipitate as the early plasma derived concentrates did not have sufficient VWF. It was not until the mid-1990s that treatment with large pool concentrate became possible because of the improved 'VWF' content. DDAVP (also known as Desmopressin), a treatment only used for mild to moderate 'VWD' came into use from around 1981.

9. In 1978, MAS was transferred from Great Ormond Street Hospital to the Haemophilia Centre at the Royal Free Hospital ('the Centre'). His hospital number was 217031. He was one of several members of the family (with his brother, father and daughter, TS) who were treated at the Centre for 'VWD'.

10. The records show that MAS was given NHS plasma derived Factor VIII concentrate for his 'VWD' in 1981 but this was before my involvement in his care.

11. On or around 30 September 1982, MAS was reviewed at the Centre when it was noted that he may have persistent non-A non-B hepatitis because of raised transaminases (enzymes) **[WITN0644006].**

12. On 28 May 1989, MAS was seen at the Centre by Dr Huang. **[WITN0644007].** He had not been seen at the Centre since 1986 and had self-referred to casualty following a fall. There was no clinical evidence of a fracture but he had twisted his ankle and had limited movement with bleeding into the joint. Dr Huang prescribed DDAVP and tranexamic acid and recommended a review on 31 May 1989 which MAS did not attend.

13. On 2 June 1992, MAS was apparently seen at the Centre whilst visiting his father. The notes record that he had agreed to be tested for HCV (hepatitis C). I believe that this was following an in house PCR (polymerase chain reaction) test being introduced at the Centre. **[WITN0644008].** This was an early in house test for the virus particle itself before routine testing by the Royal

Free Hospital virology laboratory became possible, therefore it would not have been filed within the notes. Blood (virology) results for the same day confirmed that hepatitis C antibodies by EIA (enzyme immunoassay) were positive. Hepatitis C antibodies by RIBA (recombinant immunoblot assay) showed an indeterminate result. **[WITN0644009].** By way of explanation, the screening for hepatitis C involves combined testing for antigens (presence of virus) and antibodies (immune reaction to exposure to virus). The antigen/PCR test establishes whether the virus is still active and needs treating. The antibody test establishes whether the patient has ever been exposed to the hepatitis C virus. The results show that MAS had antibodies in his blood but was PCR negative (i.e. there was no infection present). This combination suggested that he was a natural clearer.

14. On 25 November 1994, MAS attended the Centre and was given DDAVP for prophylaxis prior to a dental extraction **[WITN0644010].** Blood results for 25 November 1994 confirmed that hepatitis C antibodies by EIA were positive. Hepatitis C antibodies showed reaction to the virus not the presence of the virus. **[WITN0644011].** MAS was therefore considered to be a natural clearer.

15. On 3 December 1997, the Centre wrote to MAS in relation to vCJD. It was confirmed that he had not been treated with two recent recalled batches of BPL Factor VIII where it had been found that a donor had not met the current health requirements for vCJD. **[WITN0644012].**

16. The virology samples for 1992 and 1994 were retested in 1998 as part of a study of 305 individuals with inherited bleeding disorders who were at risk of HCV having been treated with large pool clotting factor concentrates between 1961 and 1985. **[WITN0644013]**. It was concluded from the analysis that MAS was PCR (i.e. virus) negative for hepatitis C.

17. Further blood samples were tested on 21 November 2002 **[WITN0644014]** and 25 November 2002 **[WITN0644015].** The results again showed that MAS was PCR negative and suggested that he was a natural clearer. However, I now note that the hospital number for these blood tests (217068) is different to MAS' hospital number (217031).

18. On 20 September 2004, a letter was sent to MAS explaining that all patients who had received clotting factor concentrates derived from UK sourced plasma between 1980 and 2001 were considered at risk for public health purposes. MAS completed a questionnaire on 21 September 2004 requesting more information about vCJD **[WITN0644016].** A dated 8 October 2004 confirmed this and he was given an appointment to discuss this **[WITN0644017].**

19. I next saw MAS at the Centre on 12 November 2004. He attended with his wife and daughter. My clinic note and letter to the GP are attached at **[WITN0644018].** We discussed issues regarding vCJD. I advised MAS that he had not received one of the implicated batches of concentrate for vCJD. We also discussed HCV as he was concerned about this. I therefore looked back at MAS' most recent blood results from November 2002. I advised MAS that he was PCR (i.e. virus) negative for hepatitis C on 25 November 2002 and had normal liver enzymes and therefore fell into the category of 'natural clearer'. At the time, I had not appreciated that the hospital number on the November 2002 results was different to MAS' hospital number. The records show that the name and date of birth on the 2002 results were correct.

20. I did not see MAS again as I ceased working at the Centre in December 2005 but it appears that the blood samples from 1999 and 2002 were retested on 7 February 2007 and found to be positive for PCR (i.e. virus) which was consistent with current hepatitis C infection **[WITN0644019].** As noted in a letter from Dr Haque dated 14 February 2007 **[WITN0644020]**, it was believed possible that the tests done in 2002 gave a false negative result as they were performed by an earlier version of the PCR test, and, in addition, labelling or sampling errors in relation to the 2002 tests could not be ruled out.

21. In July 2008, MAS brought a claim against the hospital for the delay in diagnosing his hepatitis C. My only involvement in the litigation was to attend a meeting with the legal team to discuss the case, including the blood test results. I was not involved following this meeting and understand that the claim had settled out of Court.

Section 3: Criticism by W1000

Response to Question 2.1 – *'At paragraph 32 of witness W1000's statement, he exhibits a letter from you dated 12 November 2004. The letter recalls a consultation the witness had with you during which you discussed his concerns about variant Creutzfeldt-Jakob disease. In the letter, you state that witness W1000 was "also concerned about hepatitis C" and his test results showed that he was a "natural clearer". The witness denies mentioning hepatitis C ("HCV") during the consultation and claims that he didn't even know he had been infected at that point. Please comment on this.'*

22. The contents of my contemporaneous clinic note and letter are an accurate record of the consultation and my discussions with MAS. I distinctly remember reviewing the November 2002 results of the PCR test for HCV in the notes. MAS had agreed to be tested for hepatitis C on 2 June 1992. I did not tell MAS that he had been infected at that point as the blood results which I

reviewed did not suggest that this was the case. I had not appreciated that the blood results for 2002 had a different hospital number. It was only when the blood results were retested in 2007 that the diagnosis was confirmed.

Response to Question 2.2 – *'At paragraph 33 of witness W1000's statement, he exhibits another letter from you from the same date (12 November 2004) discussing a consultation you purportedly had with W1000's daughter regarding vCJD. The witness refutes that his daughter was ever seen in relation to vCJD and further that the contents of the letter are untrue as his daughter was confirmed not to be at risk of having contracted vCJD in 2010. Please comment on this.'*

23. The letter dated 12 November 2004 is an accurate record of the consultation. MAS' daughter and wife attended the consultation. This appointment had been specifically arranged to discuss the issues surrounding vCJD with regard to both MAS and his daughter after MAS had completed questionnaires for both himself and his daughter on 21 September 2004 asking for more information **[WITN0644021].**

24. I exhibit the note of my consultation with MAS's daughter, TS, and follow up letter to her GP **[WITN0644022]**. During my consultation with both MAS and TS I discussed the issues around vCJD. I advised that neither of them had received the implicated batches of concentrate. At that time, it was my belief that TS had received blood products of British donor plasma origin between 1980 and 2001 and that she was therefore at risk for public health purposes. At this time, TS was only aged 12 hence she may not have been aware of the implications of our discussions.

25. I understand that it was only later confirmed that the concentrate which TS had received was made from American plasma which BPL began importing from 1999 and she was therefore not at risk of vCJD for public health purposes. This was communicated to MAS and his wife in 2010.

Response to Question 2.3 – *'At paragraph 34 and 35 of witness W1000's statement, he claims that the clinicians at the Royal Free Hospital continued to administer blood products to patients despite knowing of the risks they posed. The witness quotes from an interview with Professor Edward Tuddenham published in the Hampstead Highgate Express on 5 October 2016 in which the professor states that blood products were administered to patients despite the doctors being aware of a "differential risk". Please comment on this.'*

26. NHS blood products were administered when there was a risk of bleeding or bleeding episodes. MAS had type 2M 'VWD' which was the severe form and the risk of bleeding was high. At the time of MAS' treatment with blood products, the knowledge base was limited and therefore it was not known at the time that patients who were treated with Factor VIII could become infected.

27. The comments published in the Hampstead and Highgate Express on 5 October 2016, purportedly made by Professor Tuddenham, do not reflect my views. During the period of HIV infection (1979-1985), it was not known who had been infected with HIV because the test for this virus did not become available until the end of 1984. Professor Tuddenham was researching on the molecular structure of Factor VIII during this time. Clotting factor concentrates were heated from 1985 thus inactivating the virus and no further transmissions of hepatitis C occurred.

Section 4: Other issues

28. At paragraphs 34-36 of his statement, MAS suggests that clinicians at the Royal Free Hospital were deliberately giving blood products to patients they knew to be 'dangerous'. It was MAS' 'VWD' that caused him to suffer from horrendous bleeds which required urgent and frequent treatment with blood products. It might be helpful to explain the state of knowledge about blood products and how this evolved over time.

29. Prior to the introduction of cryoprecipitate, patients with bleeding disorders were often severely damaged, particularly in their joints, or bled to death from heart failure, menorrhagia or in child birth and generally had a short life expectancy. In the mid-1960s, cryoprecipitate began to be used in the treatment of bleeding disorders. This was prepared from fresh frozen plasma reduced to a very low temperature to produce cryoprecipitate, very rich in FVIII, VWF and Fibrinogen. It could be infused by patients at home to control their bleeding.

30. By the late 1970s, freeze dried powdered concentrates containing Factor VIII and Factor IX became available. This was revolutionary in the treatment of such bleeding disorders as it enabled haemophilia patients to store the product at home and self-infuse as soon as spontaneous bleeds occurred thus reducing the risk of bleeding to death. Factor VIII concentrate was not heat treated at the time as prior to 1985 there was some concern that heat treatment could change the protein structure and cause antibodies which could make it difficult to treat haemophilic patients.

31. We started to note that patients with bleeding disorders had abnormal liver function tests. It was recognised that there was some correlation between haemophilia and non-A non-B hepatitis (later known as hepatitis C) but the test for hepatitis C did not become available until 1991. Moreover, concern about infection with hepatitis C following treatment with Factor VIII concentrate was overtaken by the HIV epidemic during the years 1978-1985.

32. Thus in summary, it was not known at the time that the blood products used to treat patients with bleeding disorders resulted in these patients becoming infected. Tests for hepatitis C only became available in 1991. We were certainly not conducting research on these patients. Importantly, we were using previously collected samples to conduct retrospective analysis of our data in order to understand the natural history of non-A non-B hepatitis to aid diagnosis and prospective treatment.

Statement of Truth

I believe the facts stated in this witness statement are true.

Signed GRO-C

Dated December 3rd 2019

Table of exhibits:

Date	Notes/ Description	Exhibit number
18.04.2019	Professor CL's CV	**WITN0644005**
30.09.1982	Letter Royal Free Hospital Haemophilia Centre to GP	**WITN0644006**
28.05.1989	Clinical notes from Royal Free Hospital Haemophilia Centre	**WITN0644007**
02.06.1992	Clinical notes from Royal Free Hospital Haemophilia Centre	**WITN0644008**
02.06.1992	Blood (virology) results	**WITN0644009**
25.11.1994	Clinical notes from Royal Free Hospital Haemophilia Centre	**WITN0644010**
25.11.1994	Blood (virology) results	**WITN0644011**
03.12.1997	Letter Haemophilia Centre to MAS	**WITN0644012**
2000	Paper by Yee et al entitled, *"The natural history of HCV in a cohort of haemophilic patients infected between 1961 and 1985"* Gut 2000; 47: 845-851	**WITN0644013**
21.11.2002	Blood (virology) results	**WITN0644014**
25.11.2002	Blood (virology) results	**WITN0644015**
20.09.2004	Letter Haemophilia Centre to MAS re vCJD and questionnaire completed by MAS	**WITN0644016**
08.10.2004	Letter Haemophilia Centre to MAS	**WITN0644017**
12.11.2004	Clinical notes from Royal Free Hospital Haemophilia Centre and Professor Lee's letter to GP	**WITN0644018**
07.02.2007	Blood (virology) results	**WITN0644019**
14.02.2007	Letter Dr Haque to Dr Chowdary	**WITN0644020**
21.09.2004	Questionnaire completed by MAS for his daughter re vCJD	**WITN0644021**
12.11.2004	Clinical notes from Royal Free Hospital Haemophilia Centre and Professor Lee's letter to GP regarding TS (MAS' daughter)	**WITN0644022**