Witness Name: Huw RODDIE
Statement No.: WITN7104001
Exhibits: WITN7104002 - WITN7104119
Dated: 22/06/2022

INFECTED BLOOD INQUIRY

WRITTEN STATEMENT OF DR HUW RODDIE, ON BEHALF OF NHS LOTHIAN

I provide this statement in response to a request under Rule 9 of the Inquiry Rules 2006 dated 16 December 2021.

I, Dr Huw Roddie, will say as follows: -

Section 1: Introduction

1. Please set out your name, address, date of birth and professional qualifications.

1. Name: Dr Huw Roddie
   Address: Department of Haematology, Western General Hospital, Edinburgh, EH4 2XU.
   Date of Birth GRO-C 1966
   Professional qualifications: MBChB, PhD, FRCPE, FRCPath

2. Please set out your current role at NHS Lothian and your responsibilities within that role.

2. Consultant Haematologist - Main clinical responsibilities are in care of patients with Haematological malignancies, Speciality Lead for Laboratory Haematology,

Chair Cancer Medicines Management Committee, Chair NHS Lothian Transfusion Committee (August 2020- still in post).

3. Please explain how you came to be appointed to the role.

3. I was appointed to a substantive post as Consultant Haematologist, Western General Hospital, Edinburgh in October 2002.

4. Please set out your employment history including the various roles and responsibilities that you have held throughout your career, as well as the dates.

4. Current roles:
    - Appointed as a Consultant Haematologist based at Western General Hospital, Edinburgh in October 2002: Main clinical responsibilities care of patients with Haematological malignancies with subspecialist interest in Myeloma and Acute Leukaemia;
    - Member of Lothian Transfusion Committee from 2002 to current date;
    - Member of Cancer Medicines Management Committee from 2005 to current date and Chair of the committee from 2016 to current date;
    - Speciality Lead for Laboratory Haematology 2014 to current date; and
    - Chair of NHS Lothian GM and ATIMP safety committee from 2020 to current date.

5. Employment history:
    - Locum Consultant Haematologist from July 2001 to October 2002, Western General Hospital, Edinburgh;
    - SNBTS Clinical Research Fellow from July 1998 to July 2001, SNBTS, Edinburgh;
    - Senior Registrar in Haematology from May 1996 to July 1998, Western General Hospital, Edinburgh;

- Registrar in Haematology from February 1993 to May 1996, Western General Hospital, Edinburgh;
- SHO Rotation in General Medicine Kent and Canterbury Hospital from 1991 to 1992;
- SHO in Medicine Waikato Hospital, New Zealand from 1990 to 1991; and
- PRHO in Paediatric surgery at Royal Hospital for Sick Children and in Haematology at Western General Hospital from 1989 to 1990.

6. This response is primarily based on my personal recollection of events relating to my time on the hospital transfusion committee, which dates back from the current time to 2002, and by my review of minutes of hospital transfusion committee meetings dating back to 1999. A complete record of the transfusion committee meeting minutes from 2000 to the current date was available to me. I also consulted with the two previous chairs of the Lothian Transfusion Committee, Dr Alastair Nimmo and Dr Charles Wallis, and some parts of the response are based on comments made by these individuals. From 2002 the Lothian Transfusion Committee was responsible for transfusion governance on all the acute hospital sites (4 acute hospital sites) but from before 2000 the individual hospitals had their own local transfusion committees who were responsible for transfusion governance. Apart from one set of minutes for the Royal Infirmary of Edinburgh and Western General Hospital transfusion committees respectively, I had no opportunity to review minutes of those individual hospital transfusion committee meetings that took place prior to 2000. Also there are no current NHS Lothian employees who were transfusion committee members prior to 2000 so there was no-one I could consult with about transfusion committee activities prior to that date. For the documentation that was available to me where I could identify evidence that related to the questions posed by the Inquiry I refer to this in the response. However, as a full time NHS clinician there was a limit to the time that was available in preparing this response and so it is possible there may be evidence I failed to identify during my review of the documentation that may have been relevant to the purposes of this Inquiry.

Section 2: Hospital Transfusion Committee history, structure & relationships

5. The Inquiry understands that the establishment of HTCs was being recommended as early as 1983, according to the proposal of Dr F. A. Ala [NHBT0016083_003]. Please provide details of the following:

- ***a. When the HTCs at the Hospitals were established;***
- ***b. Who established the HTCs and who the first Chair was;***
- ***c. Why the HTCs were established;***
- ***d. What the initial aims of the HTCs were when they were established;***
- ***e. Before the establishment of the HTCs, how the Hospital monitored transfusion practice.***

7. Lothian University Hospitals National Health Service Trust (LUHT) was established in 1999 with prior to that date HTCs operating on individual hospital sites. There is evidence in documents that refers to HTC activity at the Royal Infirmary of Edinburgh and the Western General Hospital prior to 1999 but no contemporaneous records were available that describe those activities. Whilst there were hospital transfusion committee meetings that took place prior to 1999, at least on the Royal Infirmary of Edinburgh and Western General Hospital sites, the minutes from these meetings were not held in any central store and as none of the members of the committees at that time remain NHS Lothian employees there was no means of gaining access to the minutes of meetings prior to 1999. In 1999 a LUHT Transfusion Committee was constituted with representation from medical staff based at the Royal Infirmary of Edinburgh, The Royal Hospital for Sick Children and the Western General Hospital. The first meeting of the new joint transfusion committee was held in January 2000.

8. The Chair of that LUHT transfusion Committee was Dr Colin Sinclair, Consultant Anaesthetist.

9. In response to the recommendations contained in the MEL 1999 Dr Colin

Sinclair wrote to Dr Masterson, the Chair of Surgical services, in July 1999 with a proposal for a LUHT transfusion committee whose responsibilities would include clinical governance and transfusion issues and who would seek to address the concerns about the lack of provision of education to medical staff on transfusion issues.

10. Clinical governance and transfusion issues and who would seek to address the concerns about the lack of provision of education to medical staff on transfusion issues.

11. To my knowledge, there are no hard copy documentation of HTC activities available prior to 1999 and I do not know if any electronic files exist. I believe the Chairs of the RIE and WGH HTCs would have kept hard copies and electronic files for minutes prior to 1999 in their personal folders and that there was no central NHS Lothian document store at that time. Since 2000 electronic files of the transfusion committee meetings have been held on the NHS Lothian intranet.

6. Please explain the composition of the HTCs at the Hospitals including staff, positions and areas of specialty. Please explain if the composition has changed since the HTCs were established. You may wish to refer to [AHCH0000014], specifically the recommended membership.

12. For the first meeting of the LUHT transfusion committee the chair Dr Sinclair was a consultant anaesthetist. Also present at that initial meeting was a consultant haematologist, a consultant in transfusion medicine, a senior nursing representative and a Biomedical Scientist involved in Blood Banking. There were apologies from a consultant obstetrician. It is recorded in the minutes from that meeting that further representation on the committee would be requested that was to include a paediatric haematologist, a surgeon and another consultant anaesthetist.

From my personal experience as a member of the committee from 2002 to the current date whilst membership has varied, particularly in relation to

representation from clinical users, there has been a core membership that has included at least one consultant from the following specialities; anaesthetics, surgery, obstetrics, haematology, transfusion medicine; Biomedical scientists involved in Blood banking (both for SNBTS blood bank and the NHS Lothian Blood Bank), and transfusion nurse practitioners.

The current NHS Lothian transfusion committee in addition to this core membership also has senior nursing representation, a consultant paediatrician and a consultant in general medicine, and a SNBTS quality manager. The terms 'Hospital Transfusion Committee (HTC)' and 'Regional Transfusion Committee' are not used in NHS Lothian and have not generally been used during the period since 1999 for which records are available. The Lothian Transfusion Committee (LTC), previously LUHT Transfusion Committee, is the main transfusion committee. It has representatives from all the acute hospitals in NHS Lothian (Royal Infirmary of Edinburgh; Western General Hospital; St John's Hospital and the Royal Hospital for Sick Children) and oversees issues related to blood transfusion on these sites [see WITN7104002]. For some of this period, there have also been Hospital Transfusion Groups (HTGs) on individual hospital sites which have dealt with some site-specific transfusion issues. The membership of the HTGs has overlapped with that of the LTC and they have reported to the LTC. The LTC meets in the Royal Infirmary of Edinburgh which is also the site of the Regional Transfusion Centre and there are several representatives of the Regional Transfusion Centre on the LTC. This arrangement has had the advantage of promoting excellent communication between those involved in transfusion on the different hospital sites and the Regional Transfusion Centre. It has however, posed difficulties in responding to some of the questions below relating to communication between 'HTCs', the 'Regional Transfusion Committee' and the Regional Transfusion Centre. Such communication has often occurred in NHS Lothian by means of the representatives from each hospital and the Regional Transfusion Centre discussing and agreeing issues together at LTC meetings rather than by communication between different committees. In general, when responding to the questions below about 'HTCs', the answers refer to the Lothian Transfusion Committee but in some cases may refer to the Hospital Transfusion Groups.

When responding to questions below about the 'Regional Transfusion Committee', I have generally answered with reference to the Scottish Clinical Transfusion Advisory Committee.

7. The Inquiry understands that the roles, functions and responsibilities of HTCs were recommended to include:

- ***a. Awareness of national guidelines for the promotion of good transfusion practices;***
- ***b. Development of local hospital guidelines;***
- ***c. Transfusion policy induction procedure for new staff;***
- ***d. Review of nursing procedures for administration of blood products;***
- ***e. Promotion of new information regarding transfusion matters;***
- ***f. Ensuring patients are adequately informed of transfusion matters, such as availability of alternative treatments;***
- ***g. Blood transfusion record keeping and documentation;***
- ***h. Review and notification of post transfusion complications (including adverse reactions and transfusion associated infections);***
- ***i. Assessment of transfusion practices in light of product usage; and***
- ***j. Consent for blood transfusion.***

You may wish to refer to BCUH0000060 for assistance (See BCUH0000028 for a later, non-draft version of this document. Note this version is incomplete). What roles, functions and responsibilities did the HTCs carry out from the date established? Please also include any other functions not mentioned above.

13. All these activities have taken place from the first joint NHS Lothian committee in 2000 and continue to be areas of active work at the current time.
    - The Lothian transfusion committee actively discussed and implemented new UK guidelines on good transfusion practice following their publication.
    - The key guideline and policies that the Transfusion Committee has taken a lead in developing are the Surgical Blood Ordering

Schedule, Paediatric Blood Ordering Schedule, Major Haemorrhage Protocol (both adult and paediatric), Blood transfusion Policy and Procedures, Satellite Fridge Operational policy, Emergency Blood Management Arrangements.

- New employees who have involvement in blood transfusion activities are required to undertake blood transfusion modules using online Learnpro system which is a minimum requirement for training in safe transfusion practice.
- Nursing procedures relating to administration of blood products are detailed in the Blood transfusion policy and procedure document.
- New information regarding transfusion matters has been disseminated in a number of ways. For example, for any revision to the major haemorrhage policy the new policy has been distributed as a laminated hard copy to all clinical areas involved in transfusion. In addition, a banner on the NHS Lothian intranet site directed users to the new Major Haemorrhage policy which is held within the Blood transfusion site on the NHS Lothian intranet. Email has also been used to inform clinical users of changes in transfusion practice such as the introduction of the group check policy.
- Patients are provided with an information leaflet "Receiving a Transfusion" which describes alternatives to transfusion [WITN7104003 & WITN7104004].
- In response to NHS Quality Improvement Scotland recommendations from 2008 the NHS Lothian Transfusion committee created a transfusion record that has been in use for over 10 years [WITN7104008].
- There is a process in place for routinely recording transfusion adverse events and reactions using the DATIX system. All transfusion adverse events and reactions are reviewed by the Hospital transfusion teams and if necessary reported through SABRE to MHRA/SHOT. A summary of all adverse events and near misses are reviewed at each Lothian Transfusion Committee meeting.
- The Transfusion Committee has component usage as a standing

agenda item and has actively worked with the clinical units to promote effective use of blood.

- The NHS Lothian transfusion record has a section to confirm that patients have given verbal consent for transfusion.

8. An Irish discussion document on Blood Safety and Self-Sufficiency: An agenda for the European Community from 1996 [DHSC0001926] notes 'The hospital transfusion committee can provide an ongoing assessment of the use of blood and blood products as well as introducing recommendations in order to promote the highest standards of patient care. The responsibilities of these hospital transfusion committees, where they exist are unclear and to whom they report'. Was this also the position at the Hospitals? Do you think this is a fair assessment of the HTCs? Please explain your answer.

14. Since I have been involved with the transfusion committees, I think the responsibilities of the transfusion committees in Lothian have been clear. The Hospital Transfusion Groups in each hospital report to the Lothian Transfusion Committee. The LTC reports to the NHS Lothian Clinical Management Group and through this route is accountable to the Chief Executive of NHS Lothian. The Chair of the LTC is asked to submit a report to the Clinical Management Group quarterly and to attend its meetings quarterly. In my experience the NHS Lothian Associate Medical Director and Medical Director were always willing to meet with the chair of the LTC to discuss any concerns related to blood transfusion.

9. In a Penrose Inquiry Submission by NHS Scotland [STHB0000864, page 13], it is noted that 'Hospital transfusion committees were formed to create an interface between the laboratory as provider and the clinicians as users of blood and blood products. Their success was limited due mainly to the lack of clinician input. This problem, to a greater or lesser extent, remains today'. Was this also the position at the Hospitals? Do you think this is a fair assessment of the HTCs? Please explain your answer.

15. As I have described above since the inception of the Lothian Hospitals

Transfusion Committee there has always been good representation from clinical users that has included Anaesthetics, Surgery including transplant, Obstetrics, Critical care, Gastroenterology and Haematology. Outside the immediate membership of the committee when interacting with clinical users there generally has been a high level of engagement with transfusion related matters, an example of which being participation in transfusion audits such as the National comparative audit of Blood transfusion.

10. The Inquiry understands that it was recommended by certain Regional Transfusion Centres that HTCs should meet quarterly. Please confirm how often the HTCs met and if this changed over time. You may wish to refer to [NHBT0016084_001].

16. The Lothian Transfusion Committee has met on a quarterly basis.

11. The Inquiry understands that there was concern within the medical field about the level of education and training undertaken by those administering blood and blood products to patients. This was announced in the Better Blood Transfer Conference of 1998 [DHSC0004588_007], in which Mike Murphy (Blood Transfusion Consultant from the National Blood Service) stated 'The survey found that in general there was poor provision of training particularly for medical staff and for portering staff' . You may also wish to refer to [NHBT0010270_003] page 5. Please outline:

- ***a. If the HTCs were aware of this concern;***
- ***b. Any discussions the HTCs had as a result of the concerns;***
- ***c. Whether as a result of discussion, what, if any, training was implemented. If so, when it was and at what level the training was implemented. If it was not, why it was not?***
- ***d. The nature of the training, for example, if training was voluntary or compulsory, and whether this changed over time; and***
- ***e. A brief overview of what the training included.***

17. In the correspondence from the Chair of what was the Royal Infirmary Transfusion Committee one of the reasons for creating a Lothian Hospital

Transfusion committee was to address the issue of lack of provision of medical education on transfusion to medical staff.

18. Recorded in minutes of the transfusion committee meeting of October 2000 that there was a need to develop a training package for junior medical staff.

19. Education of staff members involved in the transfusion process has been a key objective of the NHS Lothian Hospital transfusion committee from its inception. From the meeting of October 2000 it is recorded in the minutes that an education package on transfusion was to be created for junior medical staff. From that date onwards transfusion training has been delivered and developed such that this has now become an integral part of undergraduate and post graduate medical training. Year 5 Medical students at Edinburgh University (many of whom will be employed as doctors within NHS Lothian) receive training both on the practical and theoretical aspects of blood transfusion. FY2 doctors also have training as part of their core curriculum which includes management of transfusion reactions and urgent transfusion. All medical staff who are involved in the transfusion process have a mandatory requirement to do online blood transfusion modules through Learnpro and are required to update this knowledge on a 2 yearly basis.

20. Transfusion training has been mandatory for staff involved in the transfusion process for over 10 years. Online learning was implemented in 2004.

21. As described above there is face to face teaching for undergraduate medical students and for FY doctors and online training for all medical staff involved in the transfusion process. Nursing, portering and phlebotomists involved in the transfusion process also have to undertake mandatory on-line transfusion training.

12. Please explain the nature of the relationship between the HTCs and the various departments in the Hospital that administered blood transfusions. Has this changed over time? What oversight did the HTCs have over the decisions made by the different departments utilising transfusions? How did any such

oversight operate? What was the aim of the HTCs' oversight? What were the challenges that arose in the relationship between the HTCs and the Hospital departments?

22. This HTC has over the years from its inception been highly influential in determining transfusion practice within Hospital departments. This is through the various activities and responsibilities of the HTC that include ensuring clinical staff were appropriately trained and competent in transfusion practice; by generating and implementing policies and procedures for transfusion practice and through investigation of all transfusion incidents and near misses and supporting departments in their corrective and protective actions to these. The oversight for this has been through review of blood component use by individual departments, regular audits undertaken of aspects of transfusion practice and review of transfusion incidents and near misses all of which formed part of the routine work of the HTC. Finally having transfusion practitioners based on all the main hospital sites meant that there was a direct link between hospital departments and the HTC. I am not aware of any specific areas of difficulty that have arisen between the HTC and hospital departments. This has probably been helped by the fact that there has been good clinical engagement within the HTC meaning that any clinical concerns that might have arisen in relation to a policy/guidance issued by the HTC were identified and resolved prior to the policy/guidance being implemented. In terms of how these relationships have changed over time I don't think there has been any fundamental changes during my time as a member of the HTC.

13. Please describe the nature of the HTCs' relationship with the Regional Transfusion Committee (and the relevant prior bodies including the Regional Transfusion Centre). In particular, please explain:

- ***a. Who, if anyone, from the HTCs primarily interacted with the Regional Transfusion Centre, and subsequently the Regional Transfusion Committee;***
- ***b. The topics covered by the interactions;***
- ***c. How policy and guidance was cascaded from the Region to the Hospital Transfusion Committee;***

d. What oversight the Region had over the Hospital Transfusion Committee;

e. Whether it was standard practice to have someone from the Regional Transfusion Centre sit on the HTCs;

f. The input, if any, that the Region provided to the HTCs in relation to updating and promoting transfusion practice; and

g. How the relationship changed over time.

You may wish to refer to [BSHA0000061_029].

23. In Scotland there is a national transfusion committee Scottish Clinical Transfusion Advisory Committee (SCTAC) (recently renamed as the Scottish National Blood Transfusion Committee (SBTC)) which forms the main point of interaction between the NHS Lothian Transfusion committee and a regional/national transfusion committee.

24. The Chair of the NHS Lothian Transfusion committee is and has been a member of the SCTAC/SNBTC.

25. Agenda topics that were discussed at the Scottish Transfusion Advisory Committee (equivalent to the RTC) include guidance on implementation on national (UK and Scotland) transfusion guidelines and policies, national audit proposals, SHOT reports, SNBTS changes to blood component specification and guidelines for use and review of the work of the Better Blood transfusion team (now SNBTS transfusion team) including performance against designated key performance indicators. The Chair of the Lothian HTC was a member of the Scottish Transfusion Advisory Committee and regularly attended these meetings.

26. National policies and guidance are discussed at SCTAC/SNTC at which the Chair of the NHS Lothian Transfusion Committee is usually present. Minutes of the SCTAC/SNBTC are distributed to the chairs of the NHS Board Transfusion Committees and for important policy guidance the Chair of SCTAC/SBNTC would write to chairs of these transfusion committees.

27. Chairs of the Transfusion Committees (including NHS Lothian) provide reports on local activities at the SCTAC/SNBC meetings.

28. Transfusion medicine consultants employed by the SNBTS who are members of the SCTAC/SNBTC are also (and have been) members of the NHS Lothian Transfusion Committee.

29. This role has been fulfilled in a significant way by the Better Blood Transfusion programme (BBTP) (now known as the SNBTS transfusion team) who employ transfusion practitioners in all Scotland's health boards and whose responsibilities include transfusion training and updating staff on changes to transfusion practice. The Better Blood Transfusion programme was launched in 2003. The Better Blood Transfusion team is also represented on the SCTAC/SNBC.

30. There have not been any significant changes to the interaction between the National Transfusion Committee and the NHS Lothian transfusion Committee within the timescale that I have been a member of the latter committee.

14. Please describe the HTCs' working relationship with the National Blood Transfusion Service ("NBTS"), and the relevant prior bodies including the National Blood Authority. In particular please explain:

- ***a. The input, if any, that the NBTS provided to the HTCs in relation to updating and promoting transfusion practice;***
- ***b. How the relationship changed over time; and***
- ***c. With particular regard to [NHBT0000649], was it standard practice to have a member of the National Blood Service as a member of the HTCs?***

31. The Better Blood Transfusion Programme (BBTP) was launched in 2003 whose primary objectives were to establish a programme "which will promote appropriate use and reduce risk to patients". These objectives were delivered

through the appointment of transfusion practitioners to all the Scottish Health Boards together with a small central team. BBTP is a division of the Scottish National Blood Transfusion Service (SNBTS) so meant that the SNBTS have a direct role in updating and promoting transfusion practice in Scottish Health Boards including NHS Lothian.

32. No fundamental changes to the relationship over time. The BBTP has now become the SNBTS transfusion team but still involves having transfusion practitioners based in all Scottish Health boards. The strategic objectives of the SNBTS transfusion team have been updated and now are as follows: work with NHS Scotland to ensure clinical transfusion practice is as safe as it can be and aligned to the patient safety agenda; ensure the donor's gift is used wisely through good stewardship and effective management of transfusion resources; promote accurate, timely and evidence based transfusion decision making for individual patient care; lead and innovate continuous quality improvement in clinical transfusion practice.

33. Yes, it was standard practice to have a member of the SNBTS as a member of the HTCs.

15. Please describe the relationship between the HTCs and the Hospital Transfusion Laboratory ("HTL"), with particular regard to what effect this relationship had on the HTCs' work.

34. There has been representation from the HTL from the earliest meeting of the Lothian Hospital Transfusion Committee and this has continued to be the case over the intervening years. This is both from the NHS Lothian HTL that provides blood components to the Western General Hospital and St John's Hospital and the SNBTS HTL that supplies to the Royal Infirmary of Edinburgh.

16. What do you understand to be the main obstacles faced by the HTCs from the date established until the early 2000s? Did these obstacles change over time?

35. I joined the NHS Lothian Transfusion Committee in 2002 and I am unable to comment on the time period in question.

Section 3: Policy and standard practice

17. Please outline the HTCs' knowledge as to the types of blood and blood products that were most commonly transfused to patients during the 1970s to the 2000s, the circumstances in which they were used, and how this may have changed over time.

36. On review of minutes of the Lothian Transfusion Committee it is recorded from the May 2000 minutes that an audit of surgical blood use was planned although a summary of the findings of the audit are not recorded in subsequent minutes. Regular review of wastage figures and audit of O negative red cell use by the HTC dates from 2002. From 2002 the SNBTS produced regular reports through the Scottish Transfusion Epidemiology Database that provided detailed information on blood component usage and comparison against national data. Review of these reports then became a standing agenda item.

18. The Inquiry understands that many hospitals used a Maximum Blood Schedule or Blood Ordering Schedule in Elective Surgery. Was such a schedule used by the Hospital? If so, please explain:

- ***a. When these were introduced;***
- ***b. What the purpose of these schedules were and how they operated; and***
- ***c. Whether the type of blood component and/or the suggested unit amount for each surgical intervention changed over time; If so, please outline how and why.***

Additionally, please provide copies of all available schedules.

37. It is possible that a MBOS was in place before that date but the first reference to a MSBOS in the HTC minutes is from September 2002. All surgical specialities have a MBOS in place.

38. As mentioned the earliest reference to a MBOS is September 2002 although it is probable that they were in place for a number of years before that date.

39. The purpose was to have an agreed tariff for red cell supply for elective surgical procedures. Copies of the MBOS are held in the HTLs and allocation of red cell units for surgical lists is based upon the tariff within the MBOS.

40. The MBOS have been subject to regular review and there has been a trend to requesting lower numbers of red cell units or to move to group and screen only or to use electronic issue. The current NHS Lothian MBOS in Elective Surgery is provided [WITN7104009]

19. An audit of transfusion practice across the United Kingdom by the Royal College of Physicians in 1998 [NHBT0042247] noted six controversial areas of transfusion practice:

- ***a. The nature and frequency of patient observations***
- ***b. Who wrote local policies***
- ***c. The need for two signatures to confirm adequacy of the checking procedure***
- ***d. The use of wristbands for patient identification***
- ***e. The need for a doctor to be present during transfusion***
- ***f. The action to be taken in the event of a transfusion reaction.***

How did the HTCs at the Hospitals operate to standardise or enable the above practices? If the HTCs did not, why not?

41. A major concern of the LTC was that some inpatients who might require a transfusion had no wristband, or a blank wristband or a wristband with illegible or incomplete information. Considerable efforts were made to improve this situation including two audits carried out by the Transfusion Practitioners and letters and reports to and meetings with the Clinical Management Group and Associate Medical Director. The situation did improve, particularly after the introduction of printed rather than handwritten wristbands.

42. There has been no requirement for a doctor to be present during transfusion during the period from when I first joined the HTC in 2002 to the current date.

43. All these areas of transfusion practice were covered within the Blood Transfusion Clinical Policies and Procedures document [WITN7104006 & WITN7104007] which was authored by members of the Lothian HTC. There are two versions of this document which I have provided with the response. The Blood components clinical manual 2006 which was superseded by Blood Transfusion Clinical Policy and Procedures 2016.

20. Did the HTCs provide any specific guidance to the departments within the Hospital and to clinicians administering blood transfusions in relation to the following medical situations:

- ***a. Obstetrics;***
- ***b. Trauma and emergency care;***
- ***c. Surgery;***
- ***d. Haematological malignancies;***
- ***e. Thalassaemia; and***
- ***f. Sickle Cell Anaemia.***

If so, please provide details of these policies and documentation if you are able.

44. The Lothian HTC did provide specific guidance to individual specialities. Examples of this include guidance on how much blood to send with ruptured aortic aneurysms on transfer; Obstetrics – obstetric transfusion document (promoting single unit transfusion for non-emergency cases); Trauma and emergency care – specific transfusion protocols for major haemorrhage in the Emergency Department. In addition, local policies relating to transfusion practice were in place for the majority of areas. For example the Haematology department has a Blood transfusion Policy which includes guidance on special requirements for blood components in patients with haematological malignancy and guidance on platelet transfusion.

21. Were the HTCs responsible for dealing with failure to comply with transfusion policies and practices? If so, how was this dealt with? If not, how did the Hospital deal with such failures?

45. Incidents and near misses relating to transfusion are discussed at the Lothian HTCs meeting. These are investigated by the Hospital Transfusion Teams (HTT) and are usually resolved by the relevant clinical service with the support of the HTT. For some issues such as more systemic failures to correctly follow the group check policy a hospitals wide approach has been undertaken with creation of posters that are distributed throughout clinical users to educate staff about the purpose of the policy.

22. A report by Dr Fiona Regan and Dr Clare Taylor on the Recent Advances of Blood Transfusion Medicine [NHBT0000668_001] concerning unnecessary transfusion states that, 'Implementing these plans requires effective teamwork and a clear understanding of the rationale for reducing unnecessary transfusion. However there are currently inadequate resources, in terms of funding, personnel and time, to facilitate this.' Please comment on this with regard to the situation in the Hospitals relating to unnecessary transfusion.

46. The NHS Lothian HTC has put considerable effort into reducing unnecessary transfusion and there is evidence that this has been effective based on a steady fall in the red cell usage per head of population that compares very favourably with other Scottish Health Boards. This has been achieved by the leadership from the HTC but with generally high levels of engagement by clinical users of the service and through the work of the Hospital Transfusion Practitioners.

23. Please consider 'Better Blood Transfusion' Health Service Circular 1998/999, issued on 11 December by Dr Graham Winyard, NHS Executive (NHBT0083701_002). Please outline:

a. Any discussions the HTCs had about the Circular in relation to:

i. ***Obstetrics; trauma and emergency care; surgery; haematological malignancies; thalassaemia; and sickle cell anaemia; and***
ii. ***Use of red blood cells, platelets and Fresh Frozen Plasma ("FFP")***
iii. ***Autologous transfusion***
iv. ***Single-unit transfusion***
v. ***Fresh-warm blood transfusion***
vi. ***Knowledge of risk of transfusion related infections***

b. Any actions taken by the Hospital as a result of any of the discussions above or as a direct result of the circular.

47. I do not have access to minutes of the Transfusion Committee meeting at the time of this letter. However, there has been regular discussion at the quarterly Transfusion Committee meetings since 1999 about avoiding unnecessary transfusion and supporting the appropriate transfusion of blood components, with some or all of the following topics being discussed at each transfusion committee meeting - obstetrics; trauma and emergency care; surgery; use of red blood cells, platelets and Fresh Frozen Plasma; autologous transfusion; single-unit transfusion.

48. I am not aware of discussions by the Transfusion Committee of the management of haematological malignancies; thalassaemia; and sickle cell anaemia. Transfusion policy for patients with these conditions was usually determined by specialist consultant haematologists.

49. I can find no documentation of discussion of fresh warm blood transfusion during the period for which records are available.

50. There was regular discussion of the education on blood transfusion provided to all staff involved in the transfusion process. This included information on the risk of transfusion related infections.

51. The Chair of the Royal Infirmary HTC, Dr Colin Sinclair, gave a presentation in May 1999 to the Hospital Strategy group on the MEL "Better Blood Transfusion" and advised that the then Royal Infirmary Trust had a responsibility for implementing the MEL recommendations. Actions subsequently taken included:

- Increase in the use of Cell Saver autotransfusion systems to salvage and retransfuse blood lost during surgery and reduce the need for donor red cell transfusions. The number of such systems used in Lothian gradually increased from one in 1998 to ten by 2008;
- Expansion of point-of-care testing of blood coagulation in the operating theatres and intensive care units in order to reduce inappropriate transfusions of blood components such as fresh frozen plasma and platelets;
- Employment of a full time surgical blood conservation practitioner in 2005 (funded by the SNBTS) to provide education and support for the use of cell salvage and point of care testing of coagulation;
- Adoption in the Royal Infirmary of a policy of single unit transfusion for non-emergency transfusion of red cells supported by the Blood Bank issuing only one unit of red cells at a time to the wards except in emergency situations;
- Compulsory blood transfusion education for all staff involved in the transfusion process- either face to face education from the transfusion practitioners or online education;
- Collection, dissemination and review of data on transfusion rates at hospital and ward/theatre level. See attachment - NHS Lothian Transfusion Rates [WITN7104005].

24. At a BTSAG meeting on 17 February 2004 [NHBT0060995], it was noted in a discussion about appropriate use of blood that 'Feedback from Hospital Transfusion Committee Chairs is that they have very limited ability to influence as Chief Executive Officers are not listening to their proposals.' To the best of your knowledge, were there occasions where HTC proposals were not being actioned? If so, please provide details.

52. The NHS Lothian management (Clinical Management Group, Associate Medical Director and Medical Director) were usually very supportive of proposals from the Transfusion Committee. One occasion where a proposal from the HTC was not actioned was a request for the single transfusion document to be one of the specific identified document types within the patient's electronic case records in order to make review of previous blood transfusions more practical. This was declined on the basis of insufficient IT support to make this change. The only other further proposal by the HTC that was not implemented was an electronic blood tracking system. From the HTC perspective this proposal was desirable but not considered essential as existing processes were sufficient to ensure patient safety.

Haemoglobin level

25. A Scottish Working Group on Blood and Blood Products in 1992 [SCGV0000004_007] noted that patients with a haemoglobin count of <10 g/d would require a blood transfusion. However, in the SHOT annual report 2005 [SHOT0000013] it states that, 'In general, the published data indicates that in adults, red cell transfusions will usually be required when the haemoglobin level is <6 g/dl, and will rarely be required when it is >10 g/dl. Comparative studies in adults with haemoglobin levels within the range of 6 - 10 g/dl have not shown red cell transfusions to improve outcome in surgical and intensive-care-unit (ICU) patients'. What did the HTCs understand to be the level at which a patient required transfusion and how did this change over time? Was guidance provided to clinicians at the time, and updated guidance once the HTCs became aware of any clinical change?

53. Specific guidance on red cell transfusion thresholds was provided in the NHS Lothian Blood Transfusion Clinical Policies and Procedures 2016 document [WITN7104005]. This guidance is as follows

> '*Use restrictive red blood cell transfusion thresholds for patients who need red blood cell transfusions and who do not have major*

haemorrhage or have acute coronary syndrome or need regular blood transfusions for chronic anaemia.

When using a restrictive red blood cell transfusion threshold, consider a threshold of 70 g/litre and a haemoglobin concentration target of 70–90 g/litre after transfusion.

Consider a red blood cell transfusion threshold of 80 g/litre and a haemoglobin concentration target of 80–100 g/litre after transfusion for patients with acute coronary syndrome.

Consider setting individual thresholds and haemoglobin concentration targets for each patient who needs regular blood transfusions for chronic anaemia.'

Prior to 2016 the HTC did not provide written guidance on red cell transfusion thresholds to individual hospital departments but within the Blood component Clinical Procedures manual (2006) referenced the British Committee for Standards in Haematology guidelines on red cell use (2001).

26. The enclosed article 'Reducing red blood cell transfusion in elective surgical patients: the role of audit and practice guidelines' by Mallet et al published in Anaesthesia (2000) reports on a study that found that 'haemoglobin was measured infrequently prior to transfusion and the main 'trigger' for transfusion was an estimated blood loss of 500 ml' [NHBT0086594_003] (p1). The article adds that 'many clinicians continue routinely to transfuse to haemoglobin levels >10 g/dl despite little scientific evidence to support this practice' (p2).

Please address the following:

a. ***Did the HTCs hold any discussions about the frequency of monitoring haemoglobin levels? If so, please provide details and outcomes of any discussions.***

b. To the best of your knowledge, were the HTCs aware of excessive or unnecessary transfusion within the Hospitals? If so, please provide details, including any guidance provided to clinicians.

54. During the past 20 years, rapid point-of-care measurement of haemoglobin before undertaking red cell transfusion and restrictive transfusion thresholds has been used very extensively in surgical patients in the operating theatres and postoperatively in the recovery rooms, High Dependency Units and Intensive Care Units in Lothian. The surgical blood conservation practitioner was a member of the Lothian Transfusion Committee and contributed to discussions at the committee meetings.

55. Over the period of time that I have been a member of the Lothian HTC I have observed a steady decline in red cell usage which has predominantly been as a consequence of reduction in surgical blood use. This reduction has been due to a number of factors that include use of a MBOS, easier access to red cells due to electronic issue and use of cell salvage. I am not sure I would characterise the transfusion that took place prior to 2002 as unnecessary as those initiatives were not present at that time that have subsequently allowed for a reduction in red cell use.

27. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning haemoglobin levels and transfusion? If so, what was this guidance?

56. The guidance contained within the Blood Transfusion Clinical Policies and Procedures 2016 document was based on the NICE guidelines on Blood Transfusion https://www.nice.org.uk/guidance/ng24.

Autologous transfusion

28. The Inquiry understands that autologous transfusion was considered suitable for some patients and that it avoided 'infections which may be transmitted by a blood transfusion', as per the guidelines for autologous

transfusion, written by the British Society for Haematology and the British Blood Transfusion Society [BWCT0000088]. Please explain:

- ***a. What discussions the HTCs had about the use of autologous transfusions; and***
- ***b. Any considerations given to the perceived risks, benefits, suitability and cost implications of autologous transfusion.***

57. It is recorded in the minutes of the Western General Hospital HTC from April 1999 that the Chair of that committee, Dr Mike Mackie, had written to the Clinical Directors on that site to provide them with details of the SNBTS autologous transfusion programme. It also recorded from those minutes that Dr Mackie had contacted anaesthetic staff to highlight maximising peri-operative salvage as a method of reducing blood requirements. There is no later documentation that I can see on pre-deposit autologous transfusion (PAD) and my recollection is there was a low uptake of this service. BCSH guidelines for policies on alternatives to allogeneic blood transfusion published in 2007 state that PAD is not recommended except in exceptional clinical circumstances. In contrast, autologous transfusion by inter-operative cell salvage has been fully supported by the NHS Lothian HTC and its widespread implementation within NHS Lothian hospitals has made a significant contribution to reducing red cell transfusion rates. The cell salvage programme was initiated in 1998.

58. As mentioned above there is only one reference to pre-deposit autologous transfusion in HTC minutes and subsequent BCSH guidelines on alternatives to allogeneic blood transfusion recommend its use in only exceptional clinical circumstances. My assumption is that there was only very limited use of this service and it was not therefore discussed with the HTC.

29. In 'Guidelines for autologous transfusion. Pre-operative autologous donation', written by the British Committee for Standards in Haematology Blood Transfusion Task Force [BSHA0000017_021], the guidelines support predeposit autologous transfusion services within hospitals. In light of this, did the HTCs provide policy guidance to clinicians and hospital staff

concerning autologous transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

59. As mentioned above there is only one reference to pre-operative autologous transfusion from the minutes of the Western General HTC from April 1999 where the Chair of that committee had written to the clinical directors on that hospital site to advise them on the details of the SNBTS autologous transfusion programme.

30. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of autologous transfusion? If so, what was this guidance?

60. Guidance on the use of autotransfusion by red cell salvage and retransfusion in surgical patients was provided by the UK Cell Salvage Action Group and by the Association of Anaesthetists. Members of the Lothian Transfusion Committee were members of the UK Cell Salvage Action Group and of the Association of Anaesthetists' Working Party and contributed to the production of these guidelines.

Massive Transfusion

31. What is the HTCs understanding of massive transfusion, including number of units and type of blood components? In what circumstances would massive transfusion be provided to patients?

61. It is recorded in the minutes of the Lothian HTC from October 2000 that a protocol be developed for patients with major haemorrhage. The final protocol was agreed by the HTC in November 2001 and shortly after implemented within the Lothian hospitals (excepting the Royal Hospital for Sick Children where a separate protocol was developed). I do not have access to that original protocol and the major haemorrhage protocol has now been through a number of revisions. The focus of the protocol and in training delivered to junior medical staff is to allow for recognition of a major haemorrhage and the need to then

activate the major haemorrhage protocol. Recognition of major haemorrhage is not based on number or type of blood components transfused but by the following criteria; loss of one blood volume within a 24 hour period, 50% blood loss within 3 hours, rate loss of 150mls/min or bleeding which leads to a heart rate of 110 beats/min and/or systolic blood pressure of less than 90mmHg. These definitions of major haemorrhage are part of the educational material provided to junior doctors with their mandatory transfusion training. However, it is not necessary for these criteria to be met in order for the Major Haemorrhage Protocol to be activated. Rather, any clinician may trigger the protocol if they are concerned that the severity of bleeding and/or the time required to obtain blood components for transfusion may pose a risk to patient safety.

32. What discussions did the HTCs have in relation to incidents requiring massive transfusion? What process was followed after such an incident to assess the need for massive transfusion?

62. Major haemorrhage events were reviewed by the Hospital Transfusion Team and discussed at the Transfusion Committee in any cases where either the clinicians managing the patient or the transfusion laboratory felt that an aspect of the transfusion process may not have been appropriate or might have been improved. Recently a feedback form has been introduced which is sent to the clinical team after every major haemorrhage in order to identify whether there were any issues with the timely provision of blood components. This is currently a voluntary process although recent discussions at HTC have been to make it a mandatory requirement to complete the feedback form.

33. Did the HTCs provide policy guidance to clinicians and hospital staff concerning massive transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

63. The HTC provided guidance in the form of a major haemorrhage policy.

34. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of massive transfusion? If so, what was this guidance?

64. A Scottish Major Haemorrhage Template document was provided by the Scottish Clinical Transfusion Advisory Committee and Better Blood Transfusion in 2010.

Fresh Frozen Plasma

35. What discussions did the HTCs have about the use of FFP transfusions?

65. The HTC produced guidance on blood component usage called "Blood Transfusion Clinical Policies and Procedures" with the first edition being December 2001 [WITN7104006 & WITN7104007]. This document included guidance on use of FFP.

36. Please outline any considerations given to the perceived risks, benefits and cost implications of FFP transfusions.

66. One of the committee members contributed to the development of the British Society of Haematology Guidelines on the spectrum of fresh frozen plasma and cryoprecipitate products: their handling and use in various patient groups in the absence of major bleeding. As far as the use of FFP in bleeding patients in the operating theatres, ICUs and Emergency Department is concerned, the committee had a number of discussions about and supported the use of point-of-care testing of coagulation in these areas to assist in the appropriate use of FFP.

37. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the use of FFP transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

67. Guidance was provided within the Blood Transfusion Clinical Policies and

Procedures document.

38. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of FFP transfusions? If so, what was this guidance?

68. National guidance on use of FFP was provided by the British Committee for Standards in Haematology -"Guidelines for the use of Fresh Frozen Plasma, Cryoprecipitate and Cryosupernatant (2004)" and the *British Society of Haematology Guidelines on the spectrum of fresh frozen plasma and cryoprecipitate products: their handling and use in various patient groups in the absence of major bleeding, 2018.*

Platelets

39. What discussions did the HTCs have about the use of platelet transfusions?

69. The HTC produced guidance on blood component usage called "Blood Transfusion Clinical Policies and Procedures" with the first edition being December 2001 [WITN7104006 & WITN7104007]. This document included guidance on use of platelets.

40. Please outline any considerations given to the perceived risks, benefits and cost implications of platelet transfusions.

70. The committee had a number of discussions about and supported the use of point-of-care testing of coagulation to assist in the appropriate use of platelet transfusions.

41. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the use of platelet transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

71. Guidance was provided within the Blood Transfusion Clinical Policies and Procedures document. Please see the answer to question 39 above.

42. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of platelet transfusions? If so, what was this guidance?

72. National guidance on use of platelets was provided by the British Committee for Standards in Haematology - "Guidelines for the use of Platelet Transfusions (2003)" and 'Guidelines for the use of Platelet Transfusions (2016)'.

Single Unit Transfusion

Please consider the enclosed documents [DHSC0035471] and [DHSC0025270] on the use of single-unit transfusions of blood in the UK.

43. What discussions did the HTCs have about the use of single-unit transfusions?

73. Please see the answer to question 47 below. During the period for which records are available, discussions about single-unit red cell transfusions were about encouraging their use in non-bleeding patients.

44. Please outline any considerations given to the perceived risks, benefits and cost implications of single-unit transfusions.

74. Please see the answer to question 47 below. It was considered that the balance of risk and benefit favoured single-unit red cell transfusion in patients who did not have active bleeding.

45. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the use of single-unit transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

75. This guidance was provided in the Blood Transfusion Clinical Policies and Procedures document. Specific guidance was to consider single-unit red blood cell transfusions for adults (or equivalent volumes calculated based on body weight for children or adults with low body weight) who do not have active bleeding and that after each single-unit red blood cell transfusion (or equivalent volumes calculated based on body weight for children or adults with low body weight), clinically reassess and check haemoglobin levels, and give further transfusions if needed. A policy was introduced of the Blood Bank only issuing one unit of red cells at a time for ward patients who were not bleeding.

46. Are you aware of any instances or periods of time in which the HTCs became aware of concerns about unnecessary or excessive single-unit blood transfusions? If so, please explain in as much detail as you are able to recall, including how and why unnecessary transfusions were provided?

76. Not to my knowledge.

47. Single-unit transfusions are described in [DHSC0025270, page 3] as a 'waste of resources'. To the best of your knowledge, did the HTCs have specific views on the use of single-unit transfusion in relation to potential waste and did this change over time? Please explain your answer.

77. Details of the guidance given by the Transfusion Committees before 1999 are not available. However, in general, there has been a big change over time in the attitude to single unit red cell transfusions both nationally and in Lothian. At the time document DHSC0025270 was written (1991), there was a view that if an adult patient required a transfusion of red cells, then they should be transfused at least two units because a transfusion of one unit might be of limited benefit. Subsequently, as the risks of red cell transfusion became more widely recognised and more restrictive transfusion policies were adopted, this view was abandoned and replaced by a policy of transfusing only if, and to the extent, necessary. Thus the 2015 NICE guideline on blood transfusion [NG24] recommended that '1.2.5 Consider single-unit red blood cell transfusions for adults (or equivalent volumes calculated based on body weight for children or adults with low body weight) who

do not have active bleeding.' and '1.2.6 After each single-unit red blood cell transfusion (or equivalent volumes calculated based on body weight for children or adults with low body weight), clinically reassess and check haemoglobin levels, and give further transfusions if needed.' During my period of involvement with the Transfusion Committee over the past 20 years, the Committee's view on single unit red cell transfusion has been similar to that in the NICE guideline, i.e. that it should be encouraged in non-bleeding patients. This view was based on an assessment of the benefits and risks to the patient and not on the use of resources. However, before this period the views on single unit transfusion may have been different.

48. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of single-unit transfusions and/or two-unit transfusions? If so, what was this guidance?

78. The Committee was aware of the recommendations on single-unit transfusion in the 2015 NICE guideline on blood transfusion [NG24].

49. A report on the 'Audit of Medical Input in the Blood Transfusion Services' produced by Scottish National Blood Transfusion Service on 27 June 1990 [SBTS0000685_088] states that a 'special emphasis' was placed on the review of single-unit transfusions. Were audits conducted about the practice of single-unit transfusions by, or under the auspices of, the HTCs? If so, please describe the nature of them and any conclusions drawn. If possible, please provide copies of the audit reports.

79. More recently, when the policy has been to encourage the use of single rather than multi-unit red cell transfusions in patients who are not actively bleeding, an audit of red cell transfusions to anaemic post-partum obstetric patients was undertaken.

Red Cell concentrates

50. What discussions did the HTCs have about the use of red blood cell concentrate in transfusions, specifically in relation to the use of red cell concentrates in place of whole blood or other blood components?

80. Guidance on use of red cell concentrates was provided within the Blood Transfusion Clinical Policies and Procedures document.

51. Please outline any considerations given to the perceived risks, benefits and cost implications of red blood cell concentrate transfusions.

81. I can find no documentation within the HTC minutes in relation to these considerations.

52. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the use of red blood cell concentrate transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

82. Guidance on use of red cell concentrates was provided within the Blood Transfusion Clinical Policies and Procedures document. This document has been provided with this response and the guidance is within the section titled Blood Component and Associated Storage requirements.

53. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of red cell concentrates? If so, what was this guidance?

83. 2015 NICE guideline on blood transfusion [NG24].

54. To the best of your knowledge, were there any specialty uses of red cell concentrate, platelets and/or FFP that lead to an adverse reaction that required investigation? Please provide details. You may want to refer to [NHBT0090084] for assistance.

84. Not to my knowledge.

55. In relation to red blood cell concentrates:

- ***a. Were attempts made to persuade clinicians to increase their usage of red blood cell concentrates in transfusions during the 1970s and 1980s?***
- ***b. To the best of your knowledge, did the Hospital come under pressure during the 1970s and 1980s to increase usage of red blood cell concentrates? If so, where did this pressure come from?***
- ***c. According to [HSOC0020283], British clinicians had a "traditional preference" for the use of whole blood in comparison with other countries. Is this an accurate representation of the position? Were the HTCs aware of why whole blood transfusions were preferred over red blood cell concentrates during the 1970s and 1980s?***

85. With regards to questions 55a and 55b, I am unable to comment about this specific time period as it predates my involvement with the HTC.

86. With regards to question 55c, I am unable to comment about this specific time period as it predates my involvement with the HTC. However, in my personal experience from when I first qualified as a doctor in 1989 I have not been aware of any widespread clinician preference to use whole blood instead of red cell concentrate. My personal view therefore is that this is not an accurate representation of the position at least from 1989.

Fresh Warm Blood

The Inquiry has received evidence that on some occasions when a blood transfusion was needed urgently, fresh warm blood donated by hospital staff or other local authorities administered to patients. Please address the following:

56. What discussions did the HTCs have about the use of fresh warm blood in transfusions?

87. I can find no documentation within the HTC minutes in relation to fresh warm blood. I have had no personal experience of the use of fresh warm blood and I suspect it was unlikely that fresh warm blood was administered to a patient from the time period when I was first appointed in 2002.

57. Please outline any considerations given to the perceived risks, benefits and cost implications of fresh warm blood transfusions.

88. I can find no documentation within the HTC minutes in relation to fresh warm blood.

58. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the use of fresh warm blood transfusions? If so, what was this guidance? If guidance was not provided, please explain why.

89. I can find no documentation within the HTC minutes in relation to fresh warm blood.

59. Were the HTCs provided with guidance from the Department of Health, National or Regional Transfusion Committee concerning the use of fresh warm blood transfusions? If so, what was this guidance?

90. Not to my knowledge.

Section 4: Knowledge of risk

60. Please outline any discussions held during the course of the HTCs meetings regarding the knowledge of risks of viral infection associated with blood transfusion. What were the sources of this knowledge and how did this knowledge and understanding develop over time?

91. The yearly SHOT reports were tabled and discussed at the Lothian HTC

meeting. These reports provided information on the number of transfusion transmitted viral infections and the likely risk per unit transfused. The first SHOT report was published in 1998 (covering the period 1996-7) and at that time the risk of viral infection was very low. The risk has continued to be low and with increased safety measures further declined from the baseline reported in the 1996-7 report.

61. What, if any, enquiries and/or investigations did the HTCs carry out, or cause to be carried out, in respect of the risks of the transmission of viral infections through blood transfusion? If applicable, what information was obtained as a result?

92. The SHOT reports were reviewed and discussed at the Lothian HTC which included the section relating to risk of transfusion transmitted viral infection.

62. What decisions and actions were taken by the HTCs to minimise or reduce exposure of your patients to viral infection from blood transfusions?

93. The HTC promoted adherence to safe transfusion practice through creation of transfusion policies and by mandating that staff involved in the transfusion process undertake appropriate education. During the period I have been involved with the Transfusion Committee, the committee has promoted a policy of restrictive transfusion with the avoidance of unnecessary or excessive transfusion of blood components.

63. Did the HTCs provide policy guidance to clinicians and hospital staff concerning the transmission of viral infections through blood transfusion? If so, what was this guidance? If guidance was not provided, please explain why.

94. The HTC approved local use of a leaflet produced by the SNBTS for clinical staff on red cell transfusion that provided information on the risk of viral infections through blood transfusion.

64. Do you consider that the HTCs' decisions and actions, and the steps taken at the Hospitals, in response to any known or suspected risks of infection were adequate and appropriate? If so, why? If not, please explain what could or should have been done differently.

95. I can only comment on the time period from when I became a member of the HTC in 2002. During this time period, viral infection from blood transfusion was a rare event and I think that the Committee's decisions and actions relating to the risk of viral infections were probably appropriate. Much of the focus during this period was on other preventable hazards of transfusion that carried higher risks of harm and death.

65. Please outline any discussions by the HTCs concerning particular blood components or transfusion methods that carried a higher risk of viral infection. If applicable, what action was taken or guidance implemented as a result?

96. The risk of transmission of viral infection from cryoprecipitate transfusions was discussed by the Committee on several occasions. The standard adult dose of cryoprecipitate contains blood components from ten donors and this may increase the risk of transmission of infection. The Committee was aware that most Western European countries, including Ireland, have abandoned the use of cryoprecipitate and replaced it with a fibrinogen concentrate which undergoes virus-inactivation steps and is thought to carry a lower risk of the transmission of infection. The Committee requested, through the Scottish Clinical Transfusion Advisory Committee, that the Scottish National Blood Transfusion Service consider ceasing the production of cryoprecipitate and recommend the use of fibrinogen concentrate instead. The SNBTS have though continued to manufacture cryoprecipitate and at the current time this remains the first choice blood component for treatment of patients with acquired low fibrinogen.

Section 5: Reporting and audits

66. Did the Hospital have any procedures in place to ensure patients reported any adverse reactions or symptoms following a blood transfusion? If so, please explain:

a. **What procedure did the Hospital have in place?**
b. **Did this procedure extend to a time after a patient had been discharged from Hospital?**
c. **Were patients asked to report any adverse reactions or symptoms within a certain timeframe?**
d. **If clinicians were informed and/or became aware of a patient having suffered any adverse reactions or symptoms, who were they required to report this to?**
e. **Was there any mechanism for the Hospital to report any adverse reactions or symptoms to the Regional Transfusion Centre?**
f. **In the event of a patient's death after receiving a blood transfusion, what process was followed? Specifically, please address the position in relation to the registration of the death and/or any consideration of what was recorded on the death certificate.**

97. With regards to question 66a, in 2004 NHS Lothian implemented an online incident reporting system called DATIX. A specific flag for transfusion was established which meant all adverse incidents or reactions were recorded in the DATIX system. These incidents were then reviewed on a regular basis by the local hospital transfusion teams and a summary of these was tabled and discussed at the Lothian HTC.

98. With regards to questions 66b and 66c, no.

99. With regards to question 66d, clinicians were required to report this via the DATIX system.

100. With regards to question 66e, if the adverse incident or reaction was considered to have been related to a potential issue with the blood component

administered e.g. an allergic reaction or a transfusion transmitted infection then the Regional Transfusion Centre was informed of this. All suspected transfusion reactions were discussed at the meetings of the Lothian Transfusion Committee which were attended by representatives from the Regional Transfusion Centre.

101. With regards to question 66f, if a blood transfusion was considered to have been implicated in a patient's death then this would have been documented within the DATIX system as a serious adverse event and investigated by the Hospital Transfusion Team and by NHS Lothian management. Depending on the nature of the serious adverse event/reaction this would have then been reported to SHOT and/or the MHRA. In the death certificate the disease or condition directly leading to death should be recorded in section 1a. If this was considered to be due to blood transfusion then it would have been appropriate to record it as such but I have no information on whether blood transfusion has ever been recorded as a cause of death for a patient within NHS Lothian.

67. Please explain whether and how the HTCs reported suspected transfusion-transmitted infections to their supplying blood centre prior to SHOT being established.

102. I am unable to comment about this specific time period as it predates my involvement with the HTC.

68. What impact did the launch of SHOT have on the process of reporting? How did the HTCs ensure that (a) all reportable events were reported to the HTCs and (b) all reportable events were reported to SHOT?

103. From 2004 all adverse events relating to transfusion were recorded in DATIX and then reviewed by the Hospital Transfusion Teams. An assessment was made by the Hospital Transfusion Team if these were reportable to SHOT and/or MHRA and if so they were entered into the SABRE system. All SHOT/MHRA incidents were tabled and discussed at the Lothian TC.

69. In light of the Recommendations on the Hospital's and Clinician's Role in the Optimal Use of Blood and Blood Products, by the European Health Committee [NHBT0001504], did the process of reporting adverse reactions change over time?

104. Not within the time period that I have been a member of the Lothian Transfusion Committee.

70. How was transfusion practice, blood usage and blood wastage audited by the HTCs? Did this change over time?

105. The Transfusion Committee and transfusion teams initiated or participated in local audits from time to time; participated in all the Scottish audits of transfusion practice organised by Better Blood Transfusion and the Scottish Clinical Transfusion Advisory Committee; and participated in some of the National Comparative Audits of Blood Transfusion organised by NHS Blood and Transplant. Transfusion practice and blood wastage were regularly reviewed at the HTC from when the first Lothian HTC was convened. Data from the Scottish Transfusion Epidemiology Database became available to the HTC from 2002 and this allowed for regular review of blood component usage. I attach a report of the national comparative audit of blood transfusion "Audit of Patient Blood Management in Adults" undergoing elective, scheduled surgery (2015) that NHS Lothian was a participant in [WITN7104010].

71. Under what circumstances were external and internal audits conducted? How often were internal and external audits conducted by the HTCs from the date the HTCs were established?

106. There is a regular programme of audit with data reviewed at each quarterly HTC that includes monthly figures for clinical discard data such as O negative booked in rates, RCC, platelet and FFP clinical discards/non-use; traceability compliance, blood use and conservation and pre-transfusion samples rejected.

107. Ad hoc Internal audits projects have generally been speciality led but with the support of the HTC. The findings of these audits are reviewed by the HTC and any learning that is applicable outside the speciality is disseminated more widely within Lothian hospitals. For external audit proposals, such as those generated by the National Comparative Audit in Blood Transfusion, these are reviewed by the HTC and decisions taken on whether to support them and, if so, how they would be undertaken.

72. Did the HTCs record any information regarding the volume or number of transfusions that occurred in the Hospitals on an annual or cumulative basis? If so, please explain what information this consisted of and how it was recorded.

108. This data is collected and recorded in the minutes of the HTC and reviewed on an annual basis.

73. If the HTCs did record any information on the volume or number of transfusions as described in your answer to question 72 above, was this information ever reported or disseminated to any other institution or body? If so, please explain the reporting process involved.

109. Yes, this was recorded in the minutes of the HTC. Clinical users were also made aware that they could access their own departmental data on blood usage held with the Scottish Transfusion Epidemiology database. The data on blood component use by NHS Lothian is also published within the Blood Transfusion site on the NHS Lothian intranet. Please see the attached sample report of monthly and annual blood component transfusion numbers [WITN7104005].

74. Were audits specifically conducted in relation to the use of:

- ***a. FFP;***
- ***b. red blood cell concentrate;***
- ***c. platelets;***
- ***d. massive transfusions; and/or***
- ***e. autologous transfusion.***

If audits were not conducted, why not? [NHBT0090084] may be of assistance.

110. With regards to question 74a, HTC minutes refer to participation in a National Trauma group audit on code red activations which included information on supply of FFP (2015); Better Blood Transfusion Group audit of plasma component use (2018). In recent years, figures for the number of monthly FFP transfusions were discussed at the quarterly LTC meetings.

111. With regards to question 74b, HTC minutes refer to participation in the National Comparative audit on Blood Transfusion (2008); National audit of O negative red cell use (2008); TRIGGER study (transfusion in GI haemorrhage) 2012; National comparative audit study of blood use in neuro critical care units (2013); ABLE study evaluating clinical outcomes in ICU patients based on age of blood transfused (2013); National Comparative audit on patient blood management in scheduled surgery (2015). Monthly figures for red cell concentrate transfusions by hospital were discussed at each quarterly LTC meeting and on occasion the figures were further broken down to show transfusions by clinical area within the hospitals.

112. With regards to question 74c, HTC minutes refer to audit of platelet use in ICU (2012); audit of platelet usage in Haematology unit (2017). In recent years, figures for the number of monthly FFP transfusions were discussed at the quarterly LTC meetings.

113. With regards to question 74d, HTC minutes refer to participation in the UKOS survey of massive transfusion in major obstetric haemorrhage (2012); Scottish Transfusion Audit of major haemorrhage activations (2014).

114. With regards to question 74e, HTC minutes refer to participation in the SALVO trial which was looking at use of cell salvage during caesarean section (2012). Blood conservation including the use of perioperative red cell salvage and autotransfusion was discussed at the quarterly LTC meetings.

75. Did the HTCs ever have to take corrective action as a result of an audit relating to blood transfusion practice? If so, what was the process for corrective action and what was the result? Please provide details.

115. Findings of audits were regularly discussed at the HTC and it was not infrequent to make some changes to hospital transfusion practice in relation to these. One example of an audit where practice was reviewed and HTC implemented changes was the Scottish Transfusion Audit of major haemorrhage activation (2015). This was a national audit and the recommendations from it were to ensure contact telephone numbers were available; ensure appropriate use of tranexamic acid; ensure deactivation of major haemorrhage is part of the procedure; support cell salvage use and to review major haemorrhage activations to ensure lessons learned. At the HTC these recommendations were discussed and NHS Lothian was compliant in all of these except the routine review of major haemorrhage protocol activations. There is now a system of sending out a feedback form following all major haemorrhage activations in order to identify any issues that may have arisen.

Section 6: Treatment of patients

Provision of information to patients

76. What discussions, if any, did the HTCs have about providing patients at the Hospitals with information about the risks of infection as a consequence of treatment with blood?

116. As part of the NHS Lothian response to ensuring compliance with the Quality Improvement Scotland standards in Blood Transfusion 2006 a patient leaflet for patients being offered blood transfusion was provided for patients. This included a statement on the risks of viral infection from blood transfusion.

77. Did the HTCs take steps to ensure that patients were informed and educated about the risks of viral infection as a result of being transfused? If so, what steps did the HTCs take?

117. From 2007 this was through providing patients with the leaflet on receiving a transfusion.

Consent

78. An audit of transfusion practice across the United Kingdom by the Royal College of Physicians in 1998 [NHBT0042247] indicated that none of the participating 47 hospitals required informed consent for blood transfusions. In light of this, were the HTCs aware if patients under the care of the Hospitals were treated with blood transfusions without their express or informed consent? If so, how and why did this occur?

118. From my experience on the HTC from 2002 there was no awareness that patients were receiving transfusions without their express or informed consent; however there was no formal process for confirming consent other than by recording this within the patient case records. This was discussed at the HTC in January 2007 as part of the NHS Lothian response to the QIS standards in Blood Transfusion that required "the patient's records contain evidence that the reason for transfusion of blood or blood components has been explained and discussed with the patient. This includes discussion of valid alternatives to transfusion and the option to refuse". This requirement was addressed by the creation of a single transfusion document that included the requirement to confirm patient consent.

79. Did the HTCs issue guidance to clinicians and hospital staff on informed consent for blood transfusions? If so, please explain when this guidance was introduced, what this guidance was and whether this changed over time.

119. In order to ensure consent prior to blood transfusion, a single transfusion document was created and implemented throughout NHS Lothian that had a section relating to consent that was required to be completed and confirmed prior to transfusion being administered.

Section 7: vCJD

80. When and in what circumstances did the HTCs become aware of the risks of transmission of vCJD associated with the use of blood transfusions? Please outline any discussions held by the HTCs and explain how the HTCs' knowledge developed over time. You may be assisted by [BART0000554] and [DHSC0041442_171].

120. Universal leucocyte depletion was implemented in the UK in response to the potential risk of transfusion transmission of vCJD in 1999. Whilst that predates my involvement with the Lothian transfusion committee I would assume that the HTC were aware of that risk at least as far back as 1999. At that time the potential risk of vCJD to recipients of blood transfusion was unknown but there was a range of possible estimates. An independent risk assessment performed on behalf of the Department of Health estimated that the proportion of infected donations was likely to be in the range of 1/100000 to 1/200. Comer P, Spouge J. Assessment of the risk of exposure to vCJD infectivity in blood and blood products. De Norske Veritas Final Report, Job No 8288 1999. As time went on and without a clear increase in the number of new cases of vCJD reported by the National CJD surveillance unit the perception of the risk of this disease through blood transfusion was considered to be extremely low.

81. Please outline the extent to which the HTCs were involved in assessing and managing the risk of vCJD transmission by blood transfusion.

121. Advice on the risk of vCJD transmission was received from the Scottish National Blood Transfusion Service (SNBTS) and the advisory committee on the Safety of Blood, Tissues and Organs (SaBTO). Producing policy in this area was not considered to be a specific role of the HTC although if a case of vCJD had been identified and considered as being due to blood transfusion then this would have been investigated and reviewed in the same way that applied to other transfusion incidents. More generally, the LTC promoted the avoidance of unnecessary blood component transfusion and the use of

restrictive red cell transfusion as a means of reducing the risks of transfusion including the transmission of infection.

82. Please confirm if policies, guidance, standards, or protocols were formulated at the HTCs at the Hospitals with regard to the transfusion of vCJD. If so, please describe what these were. You may be assisted by [NHBT0001719].

122. Please see the answer to question 81 above.

83. Did the HTCs have involvement in decisions as to what information should or would be provided to patients about vCJD? If so, please answer the following:

a. ***What steps were taken/put in place by the HTCs for informing patients about the risks of or possible exposure to vCJD before transfusion?***
b. ***What steps were taken/put in place by the HTCs for informing patients about the risks of or possible exposure to vCJD after transfusion (for example emergency situations)?***

You may be assisted by BART0002418, NHBT0001123_002, HCDO0000643.

123. Patients were provided with the information leaflet on receiving transfusion. Within the leaflet is a statement that says "the chance of contracting vCJD from a transfusion is very small".

124. Patients could still be provided with the leaflet after having received a transfusion as these were/are widely available with NHS Lothian hospitals.

Section 8: Look back

84. Were the HTCs ever involved in establishing the policy or procedure to be followed in any lookback exercise relating to blood transfusions? If so, please set out or provide a copy of the relevant policy or procedure.

125. Not to my knowledge but I only have access to HTC minutes from 1999.

85. What actions or decisions were taken by the HTCs at the Hospitals as part of the HCV 'look back' programme that commenced in 1995 to trace those infected with HCV through the use of blood transfusions?

126. This predates my time on the Lothian HTC and I only have access to HTC minutes from 1999.

86. What were the major obstacles that the Hospital faced when attempting to undertake the HCV lookback?

127. I am unable to make comment.

Section 9: Other

87. Please provide any further comment that you wish to provide about matters of relevance to the Inquiry's Terms of Reference.

128. I have no further comment to make.

88. In addition to any documents exhibited in support of your statement, the Inquiry would be grateful to receive copies of any potentially relevant documents you possess relating to the issues addressed in this letter.

129. I have provided as exhibits what I consider to be the key documents.

Statement of Truth

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

Signed GRO-C

Dated 22/06/2022

Table of exhibits:

Date	Description	Exhibit number
26 January 2015	Lothian Transfusion Committee Structure and Remit	WITN7104002
August 2017	Information leaflet on "Receiving a Transfusion" for patients and relatives	WITN7104003
6 July 2021	Information leaflet on "Receiving a Blood Transfusion" for patients, families, carers and guardians	WITN7104004
April 2020 - March 2021	Sample report of Lothian Blood Component Transfusion Rates April 2011 to October 2020	WITN7104005
2016	Blood Transfusion Clinical Policies and Procedures 2016	WITN7104006
2006	NHS Lothian, Blood Components Clinical Procedures Manual	WITN7104007
June 2011	Reporting form entitled "Documentation for Transfusion of Blood Components"	WITN7104008
2022	NHS Lothian Surgical Blood Ordering Schedule (SBOS) (Adults)	WITN7104009
2015	National Comparative Audit of Blood Transfusion: 2015 Audit of Patient Blood Management in Adults undergoing elective, scheduled surgery	WITN7104010
10 March 1999	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104011
26 April 1999	Meeting minutes of the Western General Hospital Blood Transfusion Committee	WITN7104012

12 May 1999	Meeting agenda of the Royal Infirmary of Edinburgh HTC	WITN7104013
29 June 1999	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104014
2 November 1999	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104015
20 January 2000	Clinical Effectiveness Steering Group of the Lothian University Hospitals NHS Trust	WITN7104016
24 May 2000	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104017
28 June 2000	Meeting minutes of the Lothian University Hospital HTC	WITN7104018
23 August 2000	Meeting agenda of the Lothian University HTC	WITN7104019
23 August 2000	Incomplete meeting minutes of the Lothian University HTC	WITN7104020
25 October 2000	Meeting minutes of the Lothian University HTC	WITN7104021
10 January 2001	Meeting minutes of the Lothian University HTC	WITN7104022
14 March 2001	Meeting minutes of the Lothian University HTC	WITN7104023
16 May 2001	Meeting minutes of the Lothian University HTC	WITN7104024
15 August 2001	Meeting minutes of the Lothian University Hopital HTC	WITN7104025
7 November 2001	Meeting minutes of the Lothian University HTC	WITN7104026
9 January 2002	Meeting minutes of the Lothian University HTC	WITN7104027

13 March 2002	Meeting minutes of the Lothian University HTC	WITN7104028
22 May 2002	Meeting minutes of the Lothian University HTC	WITN7104029
4 September 2002	Meeting minutes of the Lothian University HTC	WITN7104030
4 December 2002	Meeting minutes of the Lothian University HTC	WITN7104031
4 March 2003	Meeting minutes of the Lothian University HTC	WITN7104032
18 June 2003	Meeting minutes of the Lothian University HTC	WITN7104033
10 September 2003	Meeting minutes of the Lothian University HTC	WITN7104034
10 December 2003	Meeting minutes of the Lothian University HTC	WITN7104035
7 April 2004	Meeting minutes of the Lothian University HTC	WITN7104036
7 July 2004	Meeting minutes of the Lothian University HTC	WITN7104037
6 October 2004	Meeting minutes of the Lothian University HTC	WITN7104038
19 January 2005	Meeting minutes of the Lothian University HTC	WITN7104039
13 April 2005	Meeting minutes of the Lothian University HTC	WITN7104040
22 June 2005	Meeting minutes of the Lothian University HTC	WITN7104041
5 October 2005	Meeting minutes of the Lothian University HTC	WITN7104042
11 January 2006	Meeting minutes of the Lothian University HTC	WITN7104043

18 January 2006	Meeting minutes of the Western General HTC	WITN7104044
19 April 2006	Meeting minutes of the Lothian University HTC	WITN7104045
15 June 2006	Meeting minutes of the St John's Hospital Blood Wastage group	WITN7104046
28 June 2006	Meeting minutes of the Lothian University HTC	WITN7104047
10 January 2007	Meeting minutes of the Lothian University HTC	WITN7104048
26 February 2007	Meeting minutes of the St John's HTC	WITN7104049
18 April 2007	Meeting minutes of the Lothian HTC	WITN7104050
21 May 2007	Meeting minutes of the St John's HTC	WITN7104051
22 August 2007	Meeting minutes of the Lothian HTC	WITN7104052
27 August 2007	Meeting minutes of the St John's HTC	WITN7104053
4 September 2007	NHS Lothian University Hospitals Division Annual Report	WITN7104054
31 October 2007	Meeting minutes of the Lothian HTC	WITN7104055
5 December 2007	Meeting minutes of the Western General HTC	WITN7104056
20 February 2008	Meeting minutes of the Lothian HTC	WITN7104057
3 March 2008	Incomplete meeting minutes of the St John's HTC	WITN7104058
3 April 2008	Lothian Report	WITN7104059

28 May 2008	Meeting minutes of the Lothian HTC	WITN7104060
18 June 2008	Meeting minutes of the Western General HTC	WITN7104061
23 June 2008	Meeting minutes of the St John's HTC	WITN7104062
1 September 2008	Meeting minutes of the St John's HTC	WITN7104063
3 September 2008	Meeting minutes of the Lothian HTC	WITN7104064
15 December 2008	Incomplete meeting minutes of the St John's HTC	WITN7104065
7 January 2009	Meeting minutes of the Western General HTC	WITN7104066
8 January 2009	Meeting minutes of the Lothian HTC	WITN7104067
29 April 2009	Meeting minutes of the Lothian HTC	WITN7104068
1 June 2009	Meeting minutes of the St John's HTC	WITN7104069
2 September 2009	Meeting minutes of the Lothian HTC	WITN7104070
19 October 2009	Meeting minutes of the St John's HTC	WITN7104071
8 January 2010	Meeting minutes of the Lothian HTC	WITN7104072
11 January 2010	Meeting minutes of the St John's HTC	WITN7104073
19 April 2010	Meeting minutes of the St John's HTC	WITN7104074
30 April 2010	Meeting minutes of the Lothian HTC	WITN7104075

21 July 2010	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104076
19 August 2010	Meeting minutes of the Lothian HTC	WITN7104077
8 December 2010	Meeting minutes of the Lothian HTC	WITN7104078
17 January 2011	Meeting minutes of the St John's HTC	WITN7104079
9 March 2011	Meeting minutes of the Western General HTC	WITN7104080
30 March 2011	Meeting minutes of the Lothian HTC	WITN7104081
18 April 2011	Meeting minutes of the St John's HTC	WITN7104082
26 May 2011	Meeting minutes of the Royal Infirmary of Edinburgh HTC	WITN7104083
22 June 2011	Meeting minutes of the Lothian HTC	WITN7104084
22 September 2011	Meeting minutes of the St John's HTC	WITN7104085
28 September 2011	Meeting minutes of the Lothian HTC	WITN7104086
14 December 2011	Draft meeting minutes of the Lothian HTC	WITN7104087
14 March 2012	Meeting minutes of the Lothian HTC	WITN7104088
6 June 2012	Meeting minutes of the Lothian HTC	WITN7104089
10 October 2012	Meeting minutes of the Lothian HTC	WITN7104090
5 December 2012	Meeting minutes of the Lothian HTC	WITN7104091

13 March 2013	Meeting minutes of the Lothian HTC	WITN7104092
28 June 2013	Meeting minutes of the Lothian HTC	WITN7104093
25 September 2013	Meeting minutes of the Lothian HTC	WITN7104094
18 December 2013	Meeting minutes of the Lothian HTC	WITN7104095
26 March 2014	Meeting minutes of the Lothian HTC	WITN7104096
2 July 2014	Meeting minutes of the Lothian HTC	WITN7104097
8 October 2014	Draft meeting minutes of the Lothian HTC	WITN7104098
28 January 2015	Meeting minutes of the Lothian HTC	WITN7104099
6 May 2015	Meeting minutes of the Lothian HTC	WITN7104100
12 August 2015	Meeting minutes of the Lothian HTC	WITN7104101
4 November 2015	Meeting minutes of the Lothian HTC	WITN7104102
10 February 2016	Meeting minutes of the Lothian HTC	WITN7104103
4 May 2016	Meeting minutes of the Lothian HTC	WITN7104104
10 August 2016	Meeting minutes of the Lothian HTC	WITN7104105
16 November 2016	Meeting minutes of the Lothian HTC	WITN7104106
5 April 2017	Meeting minutes of the Lothian HTC	WITN7104107

9 August 2017	Meeting minutes of the Lothian HTC	WITN7104108
22 November 2017	Meeting minutes of the Lothian HTC	WITN7104109
16 May 2018	Meeting minutes of the Lothian HTC	WITN7104110
25 September 2018	Meeting minutes of the Lothian HTC	WITN7104111
6 March 2019	Meeting minutes of the Lothian HTC	WITN7104112
3 July 2019	Meeting minutes of the Lothian HTC	WITN7104113
19 February 2020	Meeting minutes of the Lothian HTC	WITN7104114
13 May 2020	Meeting minutes of the Lothian HTC	WITN7104115
5 August 2020	Meeting minutes of the Lothian HTC	WITN7104116
2 December 2020	Meeting minutes of the Lothian HTC	WITN7104117
2 June 2021	Meeting minutes of the Lothian HTC	WITN7104118
6 October 2021	Meeting minutes of the Lothian HTC	WITN7104119