4. Taking blood samples and requesting pre-transfusion compatibility testing

1. A sample is required prior to a transfusion to ensure compatibility of blood groups between donor and recipient and, (for red cell transfusion) to screen patients for atypical red cell antibodies which can potentially cause reactions
2. To determine whether a new sample is required for crossmatching prior to a transfusion, the BloodTrack ward enquiry software, available on PCs in all clinical areas, can be used by typing in the patient's MRN [Hospital Number]
3. Blood samples for transfusion may be taken by clinical staff who have been trained in the procedure and are competent in the use of BloodTrack Tx for sample labelling. Particular attention must be paid to the following:
    - 3.1. Transfusion samples must be labelled using BloodTrack Tx
    - 3.2. Positive patient identification based on asking the patient (where possible) to state their surname, first name and date of birth and checking these details match with the same details on the patient's wristband and the request.
    - 3.3. The wristband used for bar code scanning must be attached to (or in the possession of) the patient at the moment the blood sample is taken and when it is verbally confirmed and checked against the request
4. The staff member who bleeds the patient is responsible for correctly labelling the blood sample, using BloodTrack Tx. Under no circumstances must any member of staff label a sample on behalf of another staff member or lend his/her ID badge to someone else.
5. Only one patient MUST be bled at a time and the sample tube must be labelled immediately after the blood has been added. Sample tubes MUST NEVER be pre-labelled or labelled after the blood sample has left the patient's side.
6. The sample tube must be labelled with the following details, all of which automatically appear on a BloodTrack Tx label when correctly used:
    - 6.1. Medical record number
    - 6.2. Surname
    - 6.3. First name
    - 6.4. Date of birth
    - 6.5. Sex
    - 6.6. Ward/Clinic
    - 6.7. Date and time sample was taken
    - 6.8. Identification of the person taking the blood
7. If the patient is unconscious and unknown, it is acceptable to use "Unknown male/female" in place of the surname and forename in combination with the Medical record number.

6. Preparation of the patient and arranging blood collection

8. An appropriate-sized cannula should be inserted in accordance with the *Injectables Policy*. The connection of the cannula should be visible and secured. The procedure for

setting up an intravenous infusion should be followed and the usual care for intravenous lines should be applied.

9. Details of red cell units currently available for the patient can be found by typing the patient's MRN into the BloodTrack ward enquiry software, available on PCs in all clinical areas.
10. In the majority of adult cases, a gravity blood giving set is required. Infusion pumps or blood warmers may be required for some transfusions. They must be used according to the manufacturer's instructions and only blood giving sets approved for use with the pump must be used.
11. Take and record baseline observations of temperature, pulse, respiration and blood pressure prior to the transfusion.
12. In order to minimise the risk of wasting blood components due to breaching time limits, ensure that the patient is ready for the transfusion to go ahead without delays (such as requiring new venous access or shift handover) prior to contacting the porters.
13. Contact the porters and ask them to collect a blood component, stating the degree of urgency:
    - Immediately
    - Within 15 minutes
    - Within one hour
14. Generate a pick up slip using the BloodTrack Tx system for collection by the porter.

7. Collecting blood components to be transfused

15. Staff may only collect blood components if they have been trained to do so (access to the blood fridge is denied to staff who have not been trained to collect blood via the BloodTrack system, which controls the fridge door lock).
16. The collection of blood must be carried out using the BloodTrack system, which requires the use of a bar coded pick up slip generated using the BloodTrack Tx 'pick up' function.
17. General principles include:

    17.1. When collecting the blood from a blood refrigerator, the patient details must be carefully checked visually in addition to bar code scanning between the compatibility label, the blood component and the pick up slip to ensure that details are matched identically.

    17.2. Blood components must be collected for one patient at a time in all circumstances.

    17.3. One unit of red cells should be collected at a time unless extremely rapid transfusion of large quantities of blood is needed.

    17.4. The blood should be delivered to the relevant clinical area without delay. The clinical staff accepting the blood must check that the blood received is for the correct patient. The time of removal of the blood from the blood fridge is recorded in BloodTrack records.

    17.5. Clinical staff must scan the blood component on arrival to a clinical area using the BloodTrack Tx 'arrivals' function.

17.6. Blood not used within half an hour on the ward should be returned to the Blood Transfusion Laboratory if there is no prospect of it being transfused within 4 hours.

17.7. 'Remote issue' of blood is the electronic system to allocate and issue blood components to suitable patients at blood fridges remote from a Blood Transfusion Laboratory (see Appendix 6). This is only available to those staff who have been trained in the process.

17.8. If more than one unit of red cells are collected for a patient at one visit, or if blood is being transported between hospitals, they should be transported in an approved blood transport box with the correct use of cool packs, as this will extend the time allowed out of the fridge prior to transfusion (usually to 4 hours). This is usually only available from issue fridges located next to the Blood Transfusion laboratories.

8. Identifying the patient immediately prior to commencing transfusion (bedside check)

18. Any staff undertaking this procedure must be competent in the administration of intravenous drugs, have been trained in safe transfusion practice and have passed the required eLearning modules in accordance with the mandatory training and competence framework for blood transfusion (appendix 1).

19. BloodTrack Tx must be used for checking every blood component immediately prior to the transfusion ('begin transfusion or 'emergency transfusion' function) as it supports and promotes the correct procedure, which includes key visual and verbal checks of patient identification and the scanning of bar codes to ensure an exact match between blood compatibility label and patient.

20. Transfusions must not take place without a wristband attached and verified as correct for the patient which matches identically with the patient identification on the blood compatibility label.

21. The 'begin transfusion' (bedside) check must always be performed at the patient's side immediately prior to commencement of the transfusion. Once the check has been successfully completed, the blood component should be used to prime the blood giving set (if necessary) at the bedside and the transfusion commenced without delay. If the blood component leaves the patient's side after the bedside check, or if another member of staff performed the check but did not commence the transfusion, a repeat 'begin transfusion' (bedside) check will be required immediately prior to commencement of the transfusion.

22. One member of staff, identified by scanning his/her ID badge bar code, is accountable for carrying out an identity check of the patient and the blood component at the patient's bedside. The person must be a healthcare practitioner who is currently registered with the Nursing and Midwifery Council (NMC) the General Medical Council (GMC) or the Health Professions Council (HPC).

23. Any discrepancy in the identity checks of the patient and the blood component must be reported to the Blood Transfusion laboratory immediately and the blood must not be transfused until the discrepancy has been resolved, either by re-taking a blood sample for crossmatching or by sending the blood back to the Blood Transfusion Laboratory to correct a mistake, depending on the cause of the mismatch. The incident must be reported in line with the *Incident Reporting and Investigation Policy*.

23.1. If the need for blood transfusion is very urgent (blood needed within 5 minutes) and no more crossmatched blood is available, use of emergency stocks may be considered in preference to the mislabelled blood.

24. Positively identify the patient by asking his/her surname, first name and date of birth (whenever possible) and make sure that these patient identification details are the same as on the patient's wristband. It is essential that any patient having a blood transfusion has a wristband attached. If the wristband is removed, for example to take a blood test, the person removing it or finding that it has been removed is responsible for ensuring that a correct replacement wristband is attached immediately.

25. For all patients, including unconscious patients, check that the following details (surname, first name, date of birth, medical record number and gender) are the same on:
    25.1. The patient's wristband
    25.2. The compatibility label attached to the blood component
    25.3. The prescription and / or medical records

26. Check that the blood group and unit number on the blood bag are identical to those on the compatibility label attached to the blood bag (see Appendix 4 which provides a photograph of a red cell unit, indicating the labels attached by the NHS Blood and Transplant and the Blood Transfusion laboratory).

27. Also check that:

    27.1. The blood has not passed its expiry date.

    27.2. The blood bag shows no sign of damage and that there is no evidence of leakage

    27.3. The blood component complies with any special requirements. If a patient has special requirements, such as irradiated blood components, the requirement must be noted on the patient's medical records and on the prescription.

    27.4. The prescription is updated with the time and date of administration

28. The previous seven steps are completed and verified as part of the 'begin transfusion' process in BloodTrack Tx, which produces an electronic record (which is held on a secure database for 30 years) and a sticky label at the bedside with details of the bedside check, which should be placed on a history sheet in the patient's medical record.

29. Any transfusions taking place without the BloodTrack Tx begin transfusion checks must be fully documented, including blood unit number, recipient details and reasons for non-compliance, in the patient's health record and in response to follow-up documents which are sent in retrospect to ward managers in these circumstances.

9. How Transfusions are Administered

Starting the transfusion

30. Before starting the transfusion, the patient must be positively identified in accordance with the processes set out in procedure 8. Transfusions must not take place without a wristband attached and verified as correct for the patient which matches identically with the patient identification on the blood compatibility label.

31. Blood for more than one patient awaiting transfusion, for example in a treatment room or at the nurses' station, is extremely hazardous, as one of them may be ABO incompatible

with your patient. This must be avoided by arranging for collection and commencement of the transfusion of blood components one patient at a time.

32. The practitioner must wash his/her hands before starting the transfusion and utilise a no-touch technique for the connection of the transfusion. Disposable, non-sterile gloves should be worn.

33. All blood components require the use of standard blood giving sets.

34. Start the transfusion as soon as possible after the blood component's arrival in the clinical area. If a delay in starting the transfusion is likely, the blood should immediately be returned to the Blood Transfusion Laboratory refrigerator (within 30 minutes of removal) until just prior to the transfusion.

35. The transfusion of each unit of red cells should normally be completed within 4 hours of removal of the blood from the Blood Transfusion Laboratory refrigerator (for other blood components, see table below). Blood components must never be stored in drug or domestic refrigerators.

36. If a unit of red cells has been out of the refrigerator for more than half an hour and there is no prospect of it being transfused, it must be returned to the Blood Transfusion laboratory, explaining that it has been un-refrigerated for more than half an hour.

37. Commence the transfusion adjusting the regulation clamp (or pump settings) to ensure the prescribed rate of blood flow.

38. Medication must never be added to a unit of blood.

Monitoring and Care of Patients Receiving Transfusion

39. The patient should be asked to report any potential adverse effects including shivering, rashes, flushing, shortness of breath or pain in the extremities or loins.

40. Schedule of observations:

    40.1. Record temperature, pulse, respiration rate and blood pressure before the start of each unit as part of the BloodTrack Tx 'begin transfusion' (bedside) check

    40.2. Patients who are not under continual monitoring or observation must have their observations recorded using the 'vital signs' function in BloodTrack Tx. This will prompt the user to enter further details if a reaction is suspected. The first such observation should be recorded at 15 minutes and must be within 30 minutes after the begin transfusion

    40.3. Record temperature, pulse, respiration rate and blood pressure at the end of each unit.

41. Local guidelines should be established for further observations. The patient's regular observations must be continued.

42. Note that signs of a severe transfusion reaction are most likely to become apparent during the first half hour of transfusion of each component.

Changing the giving set

43. In order to prevent bacterial growth, change the giving set if the transfusion episode is to run for more than 12 hours or if there is an interruption to the closed system or if there is a delay between the end of one unit and the start of another.

Transfusion reactions

44. If a transfusion reaction is suspected, contact a doctor immediately, and record temperature, pulse, respiration rate and blood pressure. Further management depends on the type and severity of the reaction.
    44.1. A comprehensive list of non-infectious transfusion reactions can be found via this link: http://www.ihn-org.com/wp-content/uploads/2011/06/ISBT-definitions-for-non-infectious-transfusion-reactions.pdf

    44.2. A guide to the management of transfusion reactions is via this link: http://www.transfusionguidelines.org.uk/Index.aspx?Publication=HTM&Section=9&pageid=1143

45. If a severe reaction is suspected:
    45.1. Stop the transfusion and seek urgent medical advice

    45.2. Change the giving set and maintain venous access

    45.3. The reaction MUST be reported to the Blood Transfusion Laboratory. The laboratory will request the return of the implicated unit and further blood samples from the patient

    45.4. Record the volume and colour of any urine passed. if there are signs of haemolysis the urine should be saved for analysis

    45.5. Observe the patient until haemodynamically stable, recording vital signs as per the trust Track and Trigger protocol.

Documenting the transfusion

46. Each transfusion must be documented in the patient's medical records by the medical team responsible for the patient including the following information:

    - Consent to the transfusion
    - Date and time of transfusion
    - Clinical indication for the transfusion
    - Type of blood component and the number of units transfused
    - The unit numbers of each blood component transfused
    - Transfusion reactions and their management

47. It is good practice for the assessment of the effectiveness of the transfusion to be documented in the health record, including clinical effectiveness e.g. arrest of haemorrhage due to a platelet transfusion in a bleeding thrombocytopenic patient or relief of symptoms of anaemia after a red cell transfusion, or improvement in laboratory tests e.g. increase in post-transfusion haemoglobin, coagulation tests or platelet count.

Monitoring Compliance:

48. All Directorates and Clinical Units should ensure that they undertake audits of this policy (or the accompanying procedures) as part of their annual audit programme (see Appendix 2).

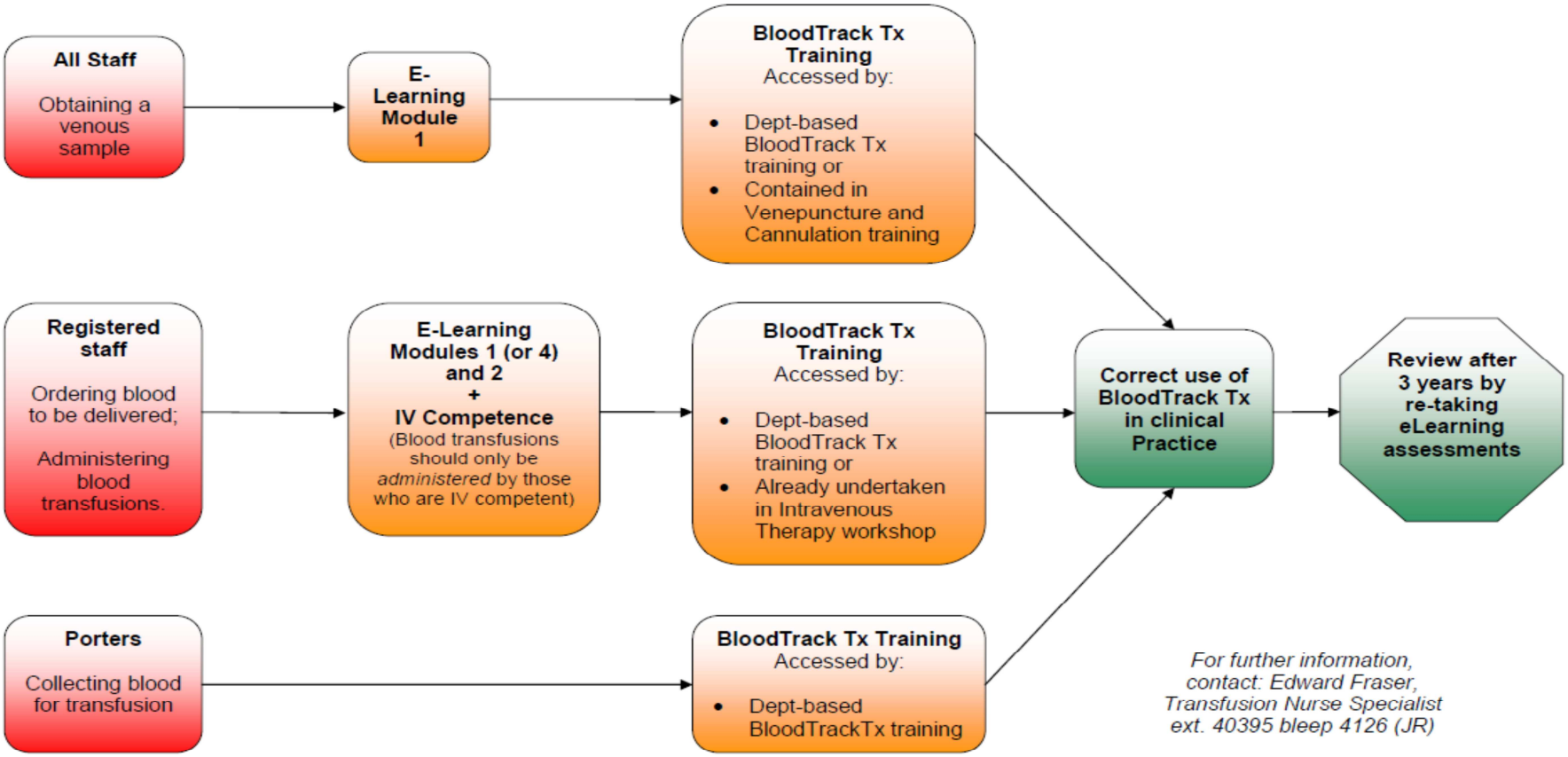
49. Compliance with the document will be monitored in the following ways:

Aspect of compliance or effectiveness being monitored	Monitoring method	Responsibility for monitoring (job title)	Frequency of monitoring	Group or Committee that will review the findings and monitor completion of any resulting action plan
How blood samples are requested for pre-transfusion compatibility testing	Blood transfusion laboratory data, audits	Blood Transfusion Laboratory Manager	At least once every three years	Hospital Transfusion Committee
How transfusions are administered, including patient identification	Audit of the process using the BloodTrack Tx software Live audits of positive patient identification at the bedside are conducted	Manager, Blood Safety and Conservation Team	On going feedback provided. Formal reports provided at least once every three years	Hospital Transfusion Committee
Care of patients receiving a transfusion	Audit of the process using the BloodTrack Tx software Live audits of bedside practice are conducted	Manager, Blood Safety and Conservation Team	At least once every three years	Hospital Transfusion Committee
How the organisation trains staff, in line with the training needs analysis (appendix 1)	In line with the Statutory and Mandatory Training Policy. The Blood Transfusion Committee receives additional supplementary information			
How the organisation assesses the competency of all staff involved in the transfusion process	In line with the Statutory and Mandatory Training Policy. The Blood Transfusion Committee receives additional supplementary information			
	Users of BloodTrack Tx are identified through the barcode from Trust's security ID database. The ELearning records and assessment of competency criteria are cross-referenced with these staff and a formal assessment is produced	Manager, Blood Safety and Conservation Team	At least once every three years	Hospital Transfusion Committee

Oxford University Hospitals NHS
NHS Trust

Right Patient Right Blood Competency Flowchart

Safe knowledge in transfusion is demonstrated via E-learning and Safe practice is demonstrated via BloodTrack Tx



For further information, contact: Edward Fraser, Transfusion Nurse Specialist ext. 40395 bleep 4126 (JR)

Appendix 4: Photograph of a red cell unit, indicating the labels attached by the NHS Blood and Transplant and the Blood Transfusion Laboratory

Appendix 5: A photograph of the BloodTrack Tx PDA

Appendix 6: Instructions for the Remote Issue of Red Cells

50. Only staff who have received Remote issue training will be eligible to use the system to allocate and issue blood components to suitable patients at blood fridges remote from a Blood Transfusion laboratory. Refresher training will be provided on a 2 yearly basis and failure to attend refresher training will mean the staff member will be blocked from using the system.

51. A patient is deemed suitable for the remote issue of blood if the following criteria are met:

    51.1. The laboratory has received and finished processing a suitably labelled sample

    51.2. The patient has a negative antibody screen with no history of clinically significant atypical red cell antibodies

    51.3. The patient has not received a bone marrow/stem cell transplant

    51.4. The patient has no special requirements for blood e.g. irradiated/ Antigen typed

    51.5. The patient is over 1 year of age

52. The procedure is as follows:

    52.1. Blood component(s) requested by Doctor.

    52.2. Using BloodTrack Tx, generate a blood a 'pick up' slip from the patient wristband.

    52.3. Take the pick up slip to the BloodTrack Courier Kiosk.

    52.4. Scan the barcode on your personal ID badge.

    52.5. Press 'Taking out' on the screen.

    52.6. Scan the pdf barcode situated at bottom of pick up slip.

    52.7. A message box tells you if the patient is suitable for remote issue.

    52.8. Check the identity of the patient displayed corresponds with the patient who requires blood.

    52.9. If suitable blood is available, the green message box will confirm that the patient is eligible, the patient's blood group and how many units are available.

    52.10. If no suitable blood is available a RED box will appear and you will need to contact Blood Transfusion laboratory giving the appropriate patient information to request blood. The Blood Transfusion laboratory will then provide an estimated time when blood will be available.

    52.11. You will be asked if you want to issue a unit of blood. Select 'Yes' or 'No'.

    52.12. If 'Yes' you will be advised to remove a unit of identified group specific blood from the fridge. Only the drawer containing the appropriate group of blood will be able to be opened, this is indicated by the light next to the drawer.

    52.13. Open the fridge and select the oldest unit of the specified group – this will normally be the unit at the front of the drawer.

    52.14. You will then be prompted to scan the unit number.

    52.15. Scan the unit number at the top middle of the unit – usually beginning G052

    52.16. You may be asked to scan the product code, in which case scan the product code barcode which is situated on the middle of the left hand side of the unit.

52.17. A compatibility label will be printed.

52.18. A message box will ask if the compatibility label printed 'OK' – if the compatibility label is 'OK' select 'YES' otherwise select 'NO' and another label will be printed.

52.19. Place the compatibility label on the bag/unit of blood firmly and in the correct place, below the product barcode (see diagram for correct placement). Do NOT cover the product code, placing the label below it.

52.20. You will then be prompted to scan the unit number followed by the compatibility label barcode. This is a time sensitive step and is vital to confirm that the correct compatibility label is attached to the unit. Failure to complete this step will mean the unit is not allocated to the patient. The unit should be returned to the fridge and process repeated.

52.21. Scan the unit number followed by the pdf barcode on the previously attached compatibility label.

52.22. A message box will tell you if you have been successful, and will ask if want to issue another unit. If 'YES' select and continue the procedure from Step No. 10. If 'NO', the screen will return to its original start page.

52.23. When complete, press 'DONE' to log out.

52.24. Take unit(s) to patient and proceed with checks for blood administration using the BloodTrack Tx 'TRANSFUSE' program (follow procedure 8 'Identifying the patient immediately prior to commencing transfusion').

53. If unit (s) are no longer required, they can be returned to the fridge only if they have been out of the fridge less then 30 mins. Units out of the fridge for more then 30 mins with no imminent prospect of use must be returned to the Blood Transfusion Laboratory with an explanation for disposal. All movements in and out of the fridge must be performed using BloodTrack Courier.

Appendix 7: Procedures for Transfusion During Periods of IT Failure (down time)

Definition:

54. These procedures only apply in circumstances when is not possible to use BloodTrack Tx because of:

    54.1. A patient being admitted during a period of hospital-wide wristband printing failure

    54.2. Compatibility label printer failure in the laboratory (this will result in the issue of blood components with handwritten compatibility labels without bar codes)

    54.3. A clinical area awaiting the installation of BloodTrack Tx

    54.4. Blood fridge kiosk breakdown (applies only to collection or remote issue of blood)

    54.5. Unforeseen circumstance leading to the withdrawal of BloodTrack Tx throughout the Trust

General principles relating to the use of alternatives to BloodTrack Tx:

55. When problems arise in a local area, for example due to a PDA or printer failure, BloodTrack Tx equipment from a neighbouring ward must be used. Faults must be reported immediately to the Blood Safety and Conservation team via extension 20444 (answerphone out of hours)

56. It is the responsibility of all staff to keep their areas' BloodTrack Tx equipment in good working order and to charge the PDA and printer batteries when not in use

57. BloodTrack Tx must be used if a bar coded wristband is printable, even if the compatibility label contains a red label number and the patient has a red labelled wristband

58. Staff, including locums and agency staff who are new to the Trust need to be shown how to use BloodTrack Tx, provided they meet the OUH mandatory training and competency criteria for the task they are performing. Any staff who do not meet these criteria or who are not happy to use BloodTrack Tx must not take transfusion samples or administer blood components

    58.1. Under no circumstances must another staff member's name badge be used for BloodTrack Tx functions

    58.2. Staff must always refuse requests to label samples which they did not take themselves

    58.3. Agency staff who can demonstrate that they have met the OUH mandatory training and competency criteria and who do not possess an OUH ID badge can apply for a BloodTrack Tx enabled bar code to be issued by the Blood Transfusion Laboratory

59. If it is not possible to use BloodTrack Tx because of a problem with a blood compatibility label bar code or patient identification mismatch, the blood component must be sent back to the Blood Transfusion Laboratory who will correct the problem if possible, enabling the use of BloodTrack Tx.

    59.1. Emergency situations, such as major haemorrhage can have a higher risk of incompatible transfusions. It is therefore essential that BloodTrack Tx is used for checking every blood component prior to transfusion, using the 'emergency transfusion' function if necessary.

60. As soon as the fault is corrected, BloodTrack Tx must be used. If the patient was given a handwritten or addressograph labelled wristband, this must be replaced immediately with a printed bar coded wristband.