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Guidelines for the Collection and Re-infusion of Blood (Autologous Blood Transfusion)

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Key Points

- This document outlines the background and development of autologous transfusion (cell salvage).
- The indications and contraindications for autologous transfusion are defined.

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Guidelines for the Collection and Re-infusion of Blood (Autologous Blood Transfusion)

1. Introduction

1.1 Whilst allogeneic (donated) blood is an essential adjunct to health care, it is an expensive and limited resource (subject to the threat of future shortages), and can present a source of risk for patients as reported by the Serious Hazards of Transfusion (SHOT) steering group.

1.2 The Health Service Circular (HSC), "Better Blood Transfusion: Safe and Appropriate Use of Blood", recommends that in order to make transfusion safer, we must provide better information for patients relating to transfusion and to avoid the unnecessary use of blood in clinical practice. Blood transfusion must be an integral part of NHS care and clinical governance responsibilities.

1.3 The HSC further recommends that effective alternatives to allogeneic blood transfusion be explored, including the appropriate use of autologous blood transfusion techniques.

1.4 The use of autologous blood transfusion may be an option depending on the patient and planned surgical procedure.

1.5 The trust currently has two systems available for autologous blood collection:

- Intra operative – Dideco Electa cell separator.
- Post operative – Summit CellTrans™ ABT system.

1.6 The collection and re-infusion of autologous red blood cells provides an important contribution to reducing the demand for allogeneic blood. However, it is only one aspect of a strategic approach to safe and appropriate transfusion practice.

2. Purpose

2.1 To provide information that will allow Clinicians to safely identify suitable patients undergoing elective and/or emergency surgical procedures where autologous blood transfusion (cell salvage) could be used.

2.2 To utilise autologous transfusion in a safe effective manner.

3. Scope

Surgeons, anaesthetists, medical staff, theatre personnel, nurses and midwives involved with the collection and reinfusion of autologous blood.

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4. Definitions

4.1 Autologous Blood Transfusion (ABT) – Transfusion to an individual of blood collected from themselves.

4.2 Allogeneic blood components – Donated blood components which have been supplied by NHS Blood and Transplant.

4.3 Intra operative Cell Salvage (IOCS) – a procedure in which the patient's own blood that is lost during surgery is collected, washed and processed in a cell salvage machine to enable the red cells to be returned to the patient.

4.4 Post operative Cell Salvage (POCS) – the reinfusion of a patient's own blood which has been collected by wound drainage after an operation (usually used in orthopaedic surgery). Unlike intra-operative cell salvage this blood is not filtered or washed.

5. Process

The collection and re infusion of salvaged red cells.

6. Intraoperative Cell Salvage (IOCS)

Intra operative cell salvage is considered effective if blood loss is expected to be >700-800ml, there is routine transfusion of approximately 50% of similar cases, the site is suitable for blood salvage, and there are no contraindications.

6.1 The Dideco Electa cell separator

Blood lost by the patient during the course of surgery is salvaged by being aspirated from the field, anti coagulated, and then filtered and collected in a reservoir. In a fully automated process, it is then sent to a collection bowl, concentrated by centrifugal action, washed in 0.9% sodium chloride, and made available for re-infusion to the patient. The blood has a high haematocrit, and elements such as anticoagulant and activated clotting factors are removed during the washing phase.

6.2 Conditions of use of the Electa cell separator

6.2.1 Blood loss is expected to be > 700-800ml and/or there is routine transfusion of approximately 50% of similar cases.

6.2.2 There should be no contraindications for use of the machine (see section 6.3).

6.2.3 Use of the technique discussed with the patient in advance and documented. A patient information leaflet is available (see Appendix 3).

6.2.4 All patients should have a blood sample taken for crossmatch.

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6.2.5 The person operating the machine must have undergone a period of training, and have been assessed as competent to use the machine. A register of competent operators and the assessment workbook is available from the lead anaesthetics practitioner in theatre.

6.2.6 Theatre Standard Operating Procedure for use of the machine must be followed, and strict sterility must be observed, following the manufacturer's instructions.

6.2.7 The surgeon and anaesthetist should be made aware that cell salvage is taking place, and agree to use of the machine.

6.2.8 The anaesthetist takes responsibility for prescribing the salvaged blood.

6.2.9 A 40 micron blood filter must be used during re-infusion.

6.2.10 Transfusion bag must be clearly labelled with the patient's name, date of birth, hospital ID number and date and times of collection of blood.

6.2.11 Pre-transfusion checks (including positive patient identification) and clinical observations should be performed as per trust Blood Transfusion Policy.

6.2.12 American Association of Blood Banks (AABB) guidelines state the expiry time for Intraoperative Cell Salvaged blood is 4 hours from the completion of processing (i.e. the time when blood first enters the reinfusion bag).

6.2.13 Under **no** circumstances should any blood collected from the patient be stored in a refrigerator before use.

6.2.14 As with the transfusion of large volumes of allogeneic red cells, the return of large volumes of salvaged red blood cells will coincide with the depletion of platelets and clotting factors associated with massive blood loss.In the event of a massive reinfusion of salvaged red blood cells, it is vital to consider the need for additional appropriate transfusion support e.g. platelets, fresh frozen plasma and cryoprecipitate. Staff should be alert to a large blood loss into the collection reservoir and report this to the surgeon and/or Anaesthetist.

6.2.15 A record form must be completed for each patient when the machine is used (see Appendix 1).

6.2.16 Adverse incidents should be documented in the patients' clinical records and reported by the DATIX reporting system. Additionally, where appropriate, reporting to the relevant external bodies should be undertaken e.g. Serious Hazards of Transfusion (SHOT), Medicine and Healthcare products Regulatory Agency (MHRA). The Transfusion Operational Management team are responsible for reporting any relevant incidents to SHOT and the MHRA.

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6.3 **Contraindications for use of the Electa cell separator**

6.3.1 The patient refuses use of the technique.

6.3.2 The surgical team, anaesthetist or theatre staff involved in the case are unfamiliar with the use of the technique.

6.3.3 Bowel contents in the surgical field.

6.3.4 IOCS should be temporarily discontinued when substances not licensed for Intravenous (IV) use are used within the surgical field and could potentially be aspirated into the collection reservoir. The standard theatre suction should be used to aspirate the surgical field and the wound should be irrigated with copious IV normal saline (0.9% NaCl) before resuming IOCS.Examples of non-IV materials that should not be aspirated into the IOCS system include:

- Antibiotics not licensed for IV use.
- Iodine.
- Topical Clotting Agents.
- Orthopaedic Cement.

6.3.5 Infection. The use of IOCS in the presence of infection may result in bacterial contamination of the salvaged blood. The aspiration of blood from an infected site should be avoided and antibiotics should be given as appropriate.

6.3.6 Gastric/pancreatic secretions should not be aspirated into the system as they may cause enzymatic haemolysis and are not reliably removed by the washing procedure.

6.3.7 Pleural effusions should not be aspirated and should be drained prior to cell salvage. However, blood which subsequently accumulates in the pleural space may be aspirated.

6.3.8 Sickle cell disease. There are concerns relating to the use of IOCS in patients with sickle cell disease. The use of IOCS in patients with abnormal red cell disorders should be made on a clinical, individual patient basis taking the latest evidence into account.

6.3.9 Amniotic fluid should not be aspirated into the system due to theoretical concerns related to Amniotic Fluid Embolism (see Appendix 2).

6.3.10 Malignant disease. The use of IOCS in patients undergoing surgery for malignant disease is not recommended by the manufacturers of IOCS devices. This is due to concern about the possibility of malignant cells being reinfused and giving rise to metastases. However, there are now a number of reports in the literature of the use of IOCS in cancer surgery without obviously leading to early metastasis and some hospitals now use IOCS routinely during surgery for malignant disease. The decision to use IOCS in the presence of malignant disease should be made by the surgeon and Anaesthetist in consultation with

the patient. Aspiration of blood from around the tumour site should be avoided to minimise contamination of salvaged blood with malignant cells and the salvaged blood may be reinfused through a leucocyte reduction filter to minimise the reinfusion of any malignant cells which may have been aspirated into the collection reservoir. Guidance on the use of IOCS in radical prostatectomy and radical cystectomy is available for the National Institute for Health and Clinical Excellence.

6.3.11 Heparin induced thrombocytopenia when heparin is the anticoagulant of choice (a citrate containing anticoagulant solution may be used instead).

6.3.12 The use of Hartmann's Solution will inhibit the action of citrate based anticoagulants (e.g. ACD) if used as an irrigant or wash solution.

7. Post operative cell salvage

Postoperative cell salvage is considered effective when there is a predictable. postoperative blood loss of approximately 400ml or more, and where the quality of the blood lost is high, for example in total knee replacement surgery.

7.1 Summit Cell Trans™ Post operative blood collection system

Blood is collected via drainage tubes sited by the surgeon, under continuous low vacuum.
Each CellTrans™ unit contains:

- 1 x bellows, patient line with 'Y' connector and a re-sealable injection/sample port.
- 2 x trocar and single length PUR drain.
- 2 x 600ml transfusion bag.
- 1 x Pall Lipiguard filter with administration set (SB1KLE).

7.2 Conditions of use of the Cell Trans™ Post operative blood collection system

7.2.1 Autologous blood transfusion using the CellTrans™ system can be used for patients undergoing primary knee replacement surgery.

7.2.2 Use of the technique should discussed with the patient in advance and documented Patients must be fully informed and have consented to the operation and to the re-infusion of their own blood and donated blood, as appropriate. A patient information leaflet is available (see Appendix 3)

7.2.3 All patients will require a blood sample for group and save.

7.2.4 Theatre, Recovery and Ward staff must receive comprehensive training and be competent in the use of the CellTrans™ system.

7.2.5 The Anaesthetist takes responsibility for prescribing the salvaged blood.

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7.2.6 Strict sterility is observed, following the manufacturer's instructions.

7.2.7 Salvaged blood must not be re infused more than 6 hours after the start of each collection bag.

7.2.8 Under **no** circumstances should any blood collected from the patient be stored in a refrigerator before use.

7.2.9 A 40 micron blood filter must be used during re-infusion.

7.2.10 No more than 1200mls of salvaged blood should be re-infused.

7.2.11 The transfusion bag must be clearly labelled with the patient's name, date of birth, hospital ID number and date and times of collection of blood.

7.2.12 Pre-transfusion checks (including positive patient identification) and clinical observations should be performed as per trust Blood Transfusion Policy.

7.2.13 Pre-transfusion checks and clinical observations should be performed as per trust Blood Transfusion Policy.

7.2.14 Adverse incidents should be documented in the patients' clinical records and reported by the DATIX reporting system.

7.3 Contraindications for use Cell Trans™ blood collection system

7.3.1 The patient refuses use of the technique.

7.3.2 The surgical team, Anaesthetist or nursing staff are unfamiliar with the use of the technique.

7.3.3 Contamination of the surgical field by betadine, chlorhexadine, hydrogen peroxide, antibiotics or other agents not for parenteral use. NB: the use of these agents intra operatively is not a contraindication to post operative cell salvage providing adequate lavage of the wound using physiological saline is performed prior to closure.

7.3.4 Patients with sickle cell disease, trait and other red cell disorders.

7.3.5 The presence of infection or malignancy in the operative field.

7.4 Prescribing Instructions for blood collected using Cell Trans™ system

7.4.1 The Clinician responsible for prescribing autologous blood is the Anaesthetist.

7.4.2 Autologous blood should be prescribed on the Summit CellTrans™ Management Chart and the patient's blood products prescription chart.

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7.4.3 The rate of re infusion should be 200ml/hr.

7.5 **Criteria for re infusion of blood collected using Cell Trans™ system**

7.5.1 When sufficient blood has been collected to re-infuse – minimum 150ml.

7.5.2 When, in a **single infusion bag** either the maximum amount of blood (600mls) has been collected **or** blood has been collected for the maximum collection time (6 hours).

7.5.3 Under no circumstances should any blood collected from the patient be stored in a refrigerator before use.

7.5.4 Transfusion bag must be clearly labelled with the patient's name, date of birth, hospital ID number and date and times of collection of blood.

7.5.5 Pre-transfusion checks and clinical observations should be performed as per trust Blood Transfusion Policy.

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7.6 Procedure for Use of Cell Trans™ drainage system

7.6.1 Theatre

Action	Rationale
Wound must be washed with normal saline. **No marcain / adrenaline / iodine / antibiotics** must be left in the wound	To prevent re-infusion of unsuitable substances
Open the transit packaging and remove the CellTrans™ ABT device. The Pall LipiGuard™ Filter remains in the transit pack and must go with the patient to Recovery. Open the outer CellTrans™ ABT Device packaging using aseptic procedures and transfer the sterile inner wrapper to the sterile field. Open the sterile bag.	To reduce the risk of infection
Place the drain(s) in situ. Cut the Trocar(s) off, secure the drain(s) and connect the drain(s) to the inlet tubing via the universal Y connector (ensuring you have cut the Y connector to fit the size of drain used).	To allow drainage and to accommodate the size of drain tube used
Close the red clamp on the patient line (the line closest to the patient). Compress the bellows and hold. Close both white clamps on the transfusion bag ports. Attach both unrolled transfusion bags onto the ports below the bellows.	To ensure drainage does not commence at this time To prepare system for drainage
Tourniquet release time must be recorded on the bellows tag and on the CellTrans™ ABT management chart. Ensure the patient's name, hospital identity number and time that the tourniquet was released (or that the wound was closed, if no tourniquet was used) is clearly written.	To inform staff and allow system to activated at correct time.
Both the red and the white clamps **must remain closed for 20 minutes** following release of the tourniquet	To allow the patient's mechanism of defibrination to occur.
The anaesthetist must prescribe the re infusion on the Summit Management Chart and patients drug chart.	To ensure the infusion is given correctly, in accordance with trust prescribing guidelines

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7.6.2 **Recovery**

Action	Rationale
Hang the CellTrans™ ABT device in an upright position, using the bedrail strap. This must be below the level of the patient. Tear off the paper tie and unroll one of the transfusion bags. Only open one transfusion bag at a time.	To provide and maintain a low vacuum to the wound. To allow drainage.
Ensure the patient's details are entered in black ink onto the transfusion bag with the patient's name, hospital identity number and the time collection started. Check the time the tourniquet was released (or time of wound closure) from the bellows tag details, then start collection 20 minutes after this time.	For accurate record keeping To allow the patient's defibrination mechanism to occur.
To start collection - open the white pinch clamp on the active transfusion bag (unrolled) and the red pinch clamp on the drain line (the one nearest the patient). Do not allow the transfusion bag to overfill (600ml is the maximum)	To allow drainage into the transfusion bag to commence.
Regularly check the drain to ensure the bellows continue to create a vacuum and check the volume of blood that has been collected in the transfusion bag. Monitor drain output every 15 minutes, as indicated on Cell Trans Management chart. Inform anaesthetist or surgeon of any concerns regarding blood loss.	To ensure vacuum/drainage is in progress. To ensure timely re-infusion takes place. To maintain an accurate record of blood loss.
There may be a need to re-prime the bellows. Re-priming can be done by closing the red clamp, compressing the bellows and then opening the red clamp, making sure the white clamp is open to allow blood to pass into the transfusion bag. Ensure bellows are compressed before transferring the patient back to the ward.	To ensure vacuum/drainage is in progress
Record on the CellTrans™ management chart the latest time that this collection of blood may be re infused (i.e: 6 hours after first opening clamps).	For accurate record keeping. To ensure re-infusion commences at correct time
As part of the post operative handover to the ward nurse, details must be given of timings and deadlines for re-infusion. The transit bag with the Pall Lipiguard filter should be sent with the patient back to the ward	To provide effective communication with colleagues. To ensure ward has all the equipment needed for safe, timely re infusion.
If there is enough blood collected to commence re infusion, this should commence in recovery. Please refer to the re-infusion section. 7.4	To ensure timely re infusion of collected blood

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7.6.3 **Wards**

Action	Rationale
When collecting a patient from recovery, ensure patients details, and start time of collection, are entered correctly on the transfusion bag and all paperwork.	Effective risk management for patient safety
Regularly check the bellows, and re-prime as necessary. When bellows become fully expanded, re-prime by closing the red clamp, compressing the bellows gently, and then releasing the red clamp. When re-priming ensure one of the white clamps is open, to allow the blood to pass through to the transfusion bag.	To ensure vacuum/ drainage is in progress, and to maintain optimum vacuum level.
Monitor and record drain output, as indicated on Cell Trans™ Management chart. Inform medical staff of any concerns regarding blood loss.	To maintain an accurate record of blood loss.
Re-infuse the bag when 600mls of blood has been collected, or once the maximum 6 hours collection time is reached. The minimum amount to be transfused is 150mls. If less than 150mls has been collected after 6 hours, start the second collection, and discard the first transfusion bag. Do not collect in one transfusion bag for more than 6 hours.	To ensure safe and timely re infusion of collected blood
Only collect blood in one bag at a time. Do not engage the second transfusion bag until the first bag has been removed from the bellows. When re-infusion commences, refer to section 9.4	To ensure accurate record of collection times.
At the end of the second collection, if the collected blood is re-infused, and the transfusion bag therefore removed, it should be replaced with a wound drainage bag. If it is not re-infused, the bag can be left attached but must be clearly labelled '**for drainage only, do not transfuse'.**	In order for wound drainage to continue. To ensure no re-infusion of collected blood after the maximum collection time.
The drain should be removed as per the surgeon's instructions, and disposed of in the clinical waste, according to trust policy.	To comply with trust policies on disposal of clinical waste, and infection control.

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7.6.4 **Re-infusion**

Action	**Rationale**
Close the white clamps on the transfusion bag that is being used. Unscrew the filled transfusion bag from the bellows and replace the caps. Enter the finish time on the transfusion bag. A minimum amount of 150mls can be transfused. If less than 150mls has been collected, discard this bag and commence second collection. Complete details on the second transfusion bag, and complete CellTrans™ management chart. Commence second collection for 6 hours or 600mls if this is sooner.	To reduce the risk of infection. To maintain accurate record keeping.
Record amount of blood collected and amount being re-infused	To ensure accurate record keeping of fluid balance
Follow trust policy for the administration of blood products including: • prescription of blood • identity checks • patient observations • management of any suspected reaction or adverse event.	To follow safe transfusion practice guidelines.
To prime the filter and giving set, turn the transfusion bag upside down so that the white clamp is at the bottom. Spike the transfusion bag with giving set whilst bag is upside down. Open the clamp on the giving set, and prime by gently squeezing the bag, taking the blood up through the filter and stop at the first line on the chamber. Close the clamp on giving set. Turn system into normal position and gravity prime the line. Re-infuse the blood, at the rate prescribed by the anaesthetist, via a peripheral cannula.	 To remove air from the bag and filter. To prevent air embolism.
If re-infusion from the second collection bag is commenced, a new giving set, with Pall Lipiguard filter must be used. If both collections are re-infused, a wound drainage collection bag should be attached to the transfusion bag outlet that was last used. After **12 hours** of the tourniquet being released, the system should be regarded as for **wound drainage only**; no further collection for transfusion must take place.	All giving sets and filters used in the CellTrans™ system are supplied for single use only. To maintain wound drainage. To ensure patient safety.

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8. Endorsement

This guidelines will be approved by the Hospital Transfusion Committee & endorsed by the Quality Governance Operational Committee.

9. Distribution

9.1 The policy will be recorded on SharePoint.

9.2 Staff will be made aware of the policy during induction and clinical update sessions.

10. References

Department of Health Better Blood Transfusion The Safe and Appropriate Use of Blood . UK Cell Salvage action Group Available: http://www.transfusionguidelines.org.uk/Index.aspx?Publication=BBT&Section=22&pageid=7507 [Accessed 12/07/2016]

National Institute For Health & Clinical Excellence .2008. Intra-operative Red Blood Cell Salvage During Radical Prostatectomy of Radical Cystectomy. Available: https://www.nice.org.uk/guidance/ipg258 [Accessed 12/07/2016]

National Institute for Health & Clinical Excellence. 2005. Guideline IPG144: Intraoperative blood cell salvage in obstetrics (issued November 2005). Available: https://www.nice.org.uk/guidance/ipg144 [Accessed 12/07/2016]

Serious Hazards of Transfusion (SHOT) Report. Available: http://www.shotuk.org [Accessed 12/07/2016]

11. Associated Documents

Blood Transfusion Policy (C0160)

Policy for Standard Infection Control Precautions (C0149).

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Appendix 1

Intra Operative Cell Salvage Record Form

Dideco Electra Intra-Operative Cell Salvage Form

This form should be completed for every surgical case where blood has been collected with the intention of intra-operative cell salvage **EVEN** if the blood collected is not processed.

1. Hospital	
2. Patient Details (or patient label)	**3. Procedure details**
Surname	Speciality:
Forename	Procedure:
Gender ☐ Male ☐ Female	Date of procedure:
Address:	☐ E1 (Emergency) ☐ E2/3 (Urgent) ☐ E4 (Could Wait) ☐ Elective
	Name of Surgeon:
Hospital Number:	Name of Anaesthetist:
Date of Birth:	Name of Cell Saver Operator:
Weight (kg):	Signature of Cell Saver Operator:

4 Reason Why Collection Set Was Used But The Blood Was Not Processed			
☐ Inadequate Volume Collection ☐ Training Purpose ☐ Technical Problem ☐ Other			
5.1 Equipment Used (Unprocessed cases only)			
☐ Collection ReservoirOnly	☐ Collection Reservoir and Bowl	☐ Collection Reservoir Bowl and waste bag	☐ Whole Set
Comments/Technical Problems:			

6. Blood Volume Details			
Total Volume Processed (ml)		Time Collection Started	
Volume Packed RBC Produced (ml)		Time Processing Started	
Volume Packed RBC Transfused (ml)		Time Transfusion Started	
Volume Anticoagulant Used (ml)		Number of Bank RBC Units Given	
Estimated Unsalvaged Blood Loss (ml)		Number of Bank FFP Units Given	
Estimated Total Blood Loss (ml)		Number of Bank Platelets Units Given	
Were any additional blood components given?			

7. Comments/Problems/Critical Incidents (Please use Adverse Event and Near Miss Event Form)

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Appendix 2

Additional measures necessary in obstetric IOCS

Amniotic fluid and use of Leucocyte Depletion Filter

Amniotic fluid should ideally not be aspirated into the IOCS collection reservoir, but should be removed by separate suction prior to starting cell salvage. This recommendation will reduce the initial contamination, but it should be noted that the *in vitro* evidence is that the IOCS process can effectively remove plasma phase elements of amniotic fluid whatever the initial load. Therefore, in life-threatening haemorrhage, a clinical decision to use IOCS from the start of the procedure should be carefully considered.

After processing, a Pall RS filter (LeucoGuard® RS Leukocyte Reduction Filter, Pall Biomedical Products Co.,East Hills, NY) should be used to reinfuse IOCS blood. This is the only filter proved to effectively eliminate residual particulate elements of amniotic fluid. It should be remembered that prior to this filter becoming available in 2000, over 250 obstetric cases worldwide were reported to have safely received IOCS blood without a problem. Therefore, in life-threatening haemorrhage a clinical decision to reinfuse IOCS blood without this filter, and therefore increase the rate at which the blood can be reinfused, should be carefully considered.

Rh immunisation and Kleihauer testing

In any pregnancy involving an Rh negative mother and an Rh positive fetus there is a danger of Rh immunisation if the maternal circulation is exposed to fetal red cells. Antibodies against the fetal red cells can cause haemolytic disease of the newborn in subsequent pregnancies if untreated. Consequently all Rh negative mothers of Rh positive babies will have a Kleihauer performed in the immediate post partum period.

Kleihauer testing is required to establish the amount of fetal red cell exposure and ensures that the mother receives an appropriate dose of Anti-D immunoglobulin (usually 125 iu/ml of fetal blood). Depending on the results of the Kleihauer, a minimum of 500iu Anti-D will be offered in the post partum period to Rh negative mothers with Rh positive babies.

The same protocol should be followed for Rh negative mothers who have undergone reinfusion of IOCS blood. The presence of fetal red cells in the IOCS blood is likely because the IOCS device cannot distinguish fetal from maternal red cells. Depending on the test results it may be that higher doses of Anti-D will need to be administered.

The sample for Kleihauer testing should be taken after the reinfusion of IOCS blood and administration of Anti-D should occur within 72 hrs.

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Appendix 3

Cell Salvage Patient Information Leaflet

The following patient information leaflet is available from the Transfusion Coordinator (Ext 8422, or can be downloaded at:
http://www.transfusionguidelines.org.uk/docs/pdfs/bbt-03-Cell_Salvage_Patient_Information_V5.pdf [Accessed 12/07/2016]

Please ask

UK CELL SALVAGE ACTION GROUP
FACTSHEET

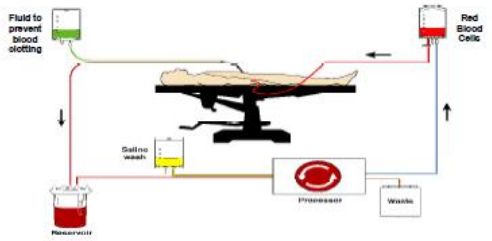
about CELL SALVAGE

What is Cell Salvage?
Cell salvage is a way of collecting the blood that is lost during, or just after your operation, so that it can be given back to you. It is sometimes called autologous blood transfusion (using your own blood).

How is it done?
There are two different types of cell salvage:

Blood collected during your operation. This is called Intraoperative Cell Salvage
Blood that is lost during your operation is collected using a cell salvage machine. This machine separates the different parts of your blood and collects just the red cells (which carry oxygen). These red cells can then be given back to you during or just after your operation. Your red cells will only ever be given to you and will never be used for someone else.

This type of cell salvage is only suitable for some operations. Ask your doctor or nurse if it is suitable for you.



Blood collected after your operation. This is called Postoperative Cell Salvage
Sometimes blood that is lost immediately after your operation can also be collected and returned to you (usually when you are back on the ward). This is called postoperative cell salvage and is usually used after certain operations e.g. knee surgery.

What are the benefits of cell salvage?
During certain operations you may lose some blood. Cell salvage can reduce the chance that you will need a transfusion of blood donated by a blood donor. This therefore reduces the very small risks associated with receiving this type of blood.



Jeff underwent hip resurfacing surgery and received autologous cell salvaged blood. He did not require donor blood and recovered remarkably quickly returning to his managerial position at the head of a busy accident repair centre. He also continues with his active lifestyle golfing, fishing and looking after his grandchildren.

Which patients could benefit from cell salvage?
Patients having certain operations e.g. cardiac (heart) surgery. Cell salvage may reduce the amount of donor blood they need.

Patients who do not wish to receive blood from a blood donor.

Why isn't it suitable for everyone?
Not all operations result in enough blood loss to enable cell salvage to be used. For some operations cell salvage is not recommended e.g. some bowel surgery.

Where can I get more information?
Ask your hospital doctor or nurse if cell salvage is available in your hospital.

If it is, your doctor or nurse will be able to advise you if it is suitable for you and for the operation you are having.

For further information about cell salvage visit:
www.transfusionguidelines.org.uk/lcs/index.htm

***CAUTION**: Refer to the Document Library for the most recent version of this document*

Quality Assurance Checklist - Version Number: 4 Appendix: 4

		Y/N/n/a	COMMENTS (where necessary)
1	**Title of document** Guidelines for the Collection and Re-infusion of Blood (Autologous Blood Transfusion) (C0187)		
2	**Type of document (e.g. guidance, code of practice)**	Guideline	
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document type is (e.g. guideline, procedure)?	Yes	
3	**Introduction**		
	Are reasons for the development of the document clearly stated?	Yes	
4	**Content**		
	Is there a standard front cover?	Yes	
	Are the key points identified?	Yes	
	Is the document in the correct format?	Yes	
	Is the purpose of the document clear?	Yes	
5	**Approval Route**		
	Does the document identify which committee/group will approve it?	Yes	
6	**Review Date**		
	Is the review date identified?	Yes	

If answers to any of the above questions is 'no', then this document is not ready for endorsement, it needs further review.

Compliance Team:		
1.	Date of Compliance Team approval	12/07/2016
2.	Comments to author for any amendments	
3.	Name of compliance lead	Jim Walker, Quality Governance & Policies Assistant

Approval Committee: HTC

If the committee/group is happy to approve this document would the chair please sign below and send the document and the minutes from the approval committee to the author. To aid distribution all documentation should be sent electronically wherever possible.

Name	Dr B Appadu	**Date**	05/10/16
Signature			

Endorsing Committee: QGOC

If the committee/group is happy to endorse this document would the chair please sign below and send the document and the minutes from the endorsing committee to the author. To aid distribution all documentation should be sent electronically wherever possible.

Name	KANCHAN REGE	**Date**	15.11.16
Signature	