

## Appendix A – Patient Audit Tool

### A. Patient demographics

Q1. What was the patient's year of birth?

Q2. Was the patient  Male?  Female?

---

### B. Patient Blood Management in the period from listing for surgery to going to theatre

Q3. On what date was the patient listed for surgery? *ddmmyy*

Q4. For what date was the surgery scheduled?

Q5. What was the actual date of surgery?

Q6. What was the type of procedure? (*Tick one option*)

- Primary unilateral total hip replacement
- Primary bilateral total hip replacement
- Primary unilateral total knee replacement
- Primary bilateral total knee replacement
- Unilateral revision hip replacement
- Unilateral revision knee replacement
- Colorectal resection for any indication (open or laparoscopic)
- Open arterial surgery e.g.: scheduled (non-ruptured) aortic aneurysm repair, infrainguinal femoropopliteal or distal bypass
- Primary coronary artery bypass graft
- Valve replacement +/- CABG
- Simple or complex hysterectomy
- Cystectomy
- Nephrectomy
- # neck of femur (arthroplasty)

Q7. Did the patient have a pre-operative assessment?

Yes **Now go to Q8**  No **Now go to Q11**

Q8. On what date did the patient have their first pre-operative assessment?

Q9. Who is responsible for reviewing the results of investigations taken at the pre-operative assessment?

- Not known
- Nurse
- Doctor – discipline and rank

Q10. If the pre operative assessment took place less than 4 weeks before surgery what was the reason?

Q11. Were FBC results available in the time between listing for surgery and up to 14 days before surgery?

- Yes **Now go to Q12**       No **Now go to Q20**

Q12. On what date during the time between listing for surgery and up to 14 days before surgery were the FBC results first available?

  

Q13. What was the Hb result?  g/L

Q14. What was the MCH result?  picograms **OR**  Not available

Q15. What was the MCV result?  femolitres **OR**  Not available

Q16. Was ferritin checked?       Yes **Now go to Q17**       No **Now go to Q18**

Q17. If yes, what was the ferritin result?  
(State unit of measurement as well as value, and include reference range) **THEN GO TO Q18**

Value	Unit of measurement	Reference range
<input type="text"/>	<input type="text"/>	<input type="text"/>

Q18. Was a transferrin saturation test done?

Yes **Now go to Q19**       No **Now go to Q20**

Q19. What was the transferrin saturation?  %

Q20. Was the patient on any of the following treatments before they had their operation?

- None
- Oral iron
- IV iron
- Erythrocytosis-stimulating agent (ESA) therapy
- B12
- Folic acid
- Red cell transfusion - *Ticking this means the patient had a red cell transfusion before they went to theatre. Now go to Q21 to record details of that transfusion episode. Details of allogeneic red cell transfusion in theatre are recorded at Q45.*

**NB: If you did not tick Red cell transfusion DO NOT complete this section. Go to Q28.**

Q21. What was the date and time of transfusion of the first unit?

Date ddmmyy            Time hh:mm

Q22. Who made the decision to transfuse? (Please state job title and, if doctor, give discipline and rank if possible)

Q23. What was the pre-transfusion Hb in g/L? (up to 72 hours before first unit transfused)

g/L    OR     Not done

Q24. How many units of red cells were given in all before the patient went to theatre?

Q25. Was the Hb recorded after each unit of red cells?       Yes       No

Q26. Did the patient have acute coronary ischaemia\*?       Yes       No  
*(\*definition of acute coronary ischaemia: STEMI (ST segment elevated myocardial infarction); NSTEMI (Non ST segment elevation myocardial infarction); Unstable angina within last 14 days)*

Q27. If the patient was transfused at a pre-transfusion Hb of >70g/L (without acute coronary syndrome) or >80g/L (with acute coronary syndrome), please state reason for transfusion:

Q28 Was the patient on any of the following medications at any time in the month leading up to surgery (*that is up until the time of Nil by Mouth*), and if so were they stopped? If they were, give the date they were stopped. *If they were not on any of them, tick "None/ No record" and go to Q30.*

	Tick if patient on drug	Tick if stopped prior to surgery / or there is a note that patient was asked to stop	On what date was it stopped /or was the patient asked to stop?
<b>Apixaban</b>			
<b>Dabigatran</b>			
<b>Rivaroxaban</b>			
<b>Warfarin</b>			
<b>Other oral anticoagulant (please state)</b>			
<b>Clopidogrel</b>			
<b>Prasugrel</b>			
<b>Ticagrelor</b>			
<b>Other antiplatelet agent (please state)</b>			

None / No record of any of the above medication prior to surgery

Q29. If the patient was on clopidogrel, prasugrel or ticagrelor or other antiplatelet agent **and it was not stopped**, give details of the documented clinical reason for continuing it:

<i>Use a <b>code</b> to tell us the reason for continuing: <b>A</b> = coronary artery stent within last 12 months, <b>B</b> = acute coronary syndrome, <b>C</b> = other, <b>D</b>= don't know. If you use code <b>C</b>, please provide brief details</i>	
<b>Clopidogrel</b>	
<b>Prasugrel</b>	
<b>Ticagrelor</b>	
<b>Other antiplatelet agent</b>	

Q30. What was the pre-operative Hb taken closest before the date of surgery?

g/L **Now go to Q31**      or       Not done **Now go to Q32**

Q31. What was the date of that Hb check?               

Q32. Was the patient on Warfarin pre-operatively?

Yes **Now go to Q33**                       No **Now go to Q35**

Q33. What was the INR result taken closest before the date of surgery?     

Q34. What was the date of that INR check?

**C: Patient Blood Management while in theatre and recovery**

Q35. Was tranexamic acid used for this patient?

Yes **Complete the table below, then go to Q36**       No **Now go to Q36**

<i>If used, write dose in relevant box</i>	Before surgery started	During surgery	After surgery
Oral			
IV			
Intra-articular			

Q36. Was a protonin used for this patient?

Yes **Now go to Q37**       No **Now go to Q38**

Q37. What was the dose used? *(Please state in mls and not KIU)*      Dose

Q38. Were haemostatic agents or sealants used for this patient?

Yes **Now go to Q39**       No **Now go to Q40**

Q39. Which agents or sealants were used?

Q40. Was collection for intra-operative cell salvage (IOCS) commenced?

Yes **Now go to Q41**       No **Now go to Q42**

Q41. Which of these describes the outcome of using IOCS?

Collected but not reinfused due to insufficient volume

Collected and reinfused – (state volume reinfused)  mls

Q42. Why was cell salvage not commenced?

- IOCS was not available on the day of surgery
- Not worthwhile in this procedure as anticipated blood loss generally too low
- Not considered in this procedure because of contaminated field
- Not considered in this procedure because of sepsis
- Not considered in this procedure because of malignancy
- Other, please state:

Q43. Was near patient testing of haemostasis undertaken?

- Yes **Now go to Q44**
- No **Now go to Q45**

Q44. Which of these near patient testing options were undertaken? *(tick as many as apply)*

- TEG
- RoTEM
- Platelet function testing
- Activated Clotting Time
- Other, please state:

*Questions 45 to 52 ask about allogeneic blood that was transfused in theatre or recovery, in other words intra-operative transfusion. If allogeneic blood **was** used, answer Yes to Q45 and continue through to Q52. If allogeneic blood **was not** used, answer No to Q45 and go to Q53.*

*We ask you to give details of post-op cell salvage and post-op allogeneic transfusion in Section D*

Q45. Was there any intra-operative transfusion with allogeneic red cells issued by the transfusion laboratory?

- Yes **Now go to Q46**                       No **Now go to Q53**

Q46. Who made the decision to transfuse? (Please state job title and, if doctor, give discipline and rank if possible)

Q47. Was the pre-transfusion Hb checked within 1 hour before transfusing the first unit?

- Yes **Now go to Q48**                       No **Now go to Q50**

Q48. How was the pre-transfusion Hb checked?

- Laboratory Hb from FBC sample  
 Hb from blood gas analyser  
 Hb from 'Masimo'  
 Hb from Haemocue  
 Other, please state

Q49. What was the first intra-operative pre-transfusion Hb?

g/L    or     Not done

**Reason for intra-operative transfusion:**

Q50. Did the patient have active bleeding?

- Yes **Now complete the boxes below, then go to Q52**                       No **Now go to Q51**

Please state how the active bleeding was recorded in the notes: give estimated blood loss (EBL) and / or change in physiological parameters:

EBL (mls)	Change in parameters
-----------	----------------------

Q51. The patient did not have active bleeding, so why were they transfused?



Q52. How many units of red cells were transfused intra-operatively?

**On arrival in recovery:**

Q53. Was an Hb taken on arrival in recovery?

Yes **Now go to Q54**                       No **Now go to Q55**

Q54. What was the Hb taken on arrival in recovery?  g/L

.....  
**D: Post-operative Patient Blood Management (when the patient had returned to the ward or had gone to HDU or similar)**

Q55. Was post-operative cell salvage used?

Yes **Now go to Q56**                       No **Now go to Q58**

Q56. Which post-op cell salvage technique(s) was/were used:

- Reinfused shed blood
- Washed red cells
- Other (You do not need to give us details of other techniques)

Q57. What was the total volume in mls of post-operative salvaged blood infused?

Q58. What was the first Hb taken on day 1?  g/L    **or**     Not done  
(Day 1 is the next calendar day after surgery)

Q59. Did any of these complications of surgery occur? (Tick as many as apply)

- No complications noted
  
- Return to theatre                       VTE                       Wound infection
- Positive blood culture                       Other, please state:

Q60. Was the patient given post-operative iron?

Yes **Now go to Q61**                       No **Now go to Q62**

Q61. Was it given     orally             IV *(Tick one or both as applicable)*

*This is where you tell us about any allogeneic red cells that were transfused once the patient had left recovery. A transfusion episode is all units of red cells given against one prescription.*

Q62. Was there transfusion on any of the first seven post-operative days? *(i.e. Day 1 to day 7)*

Yes **Now go to Q63**                       No **Now go to Q66**

Q63. How many post-operative transfusion episodes were there?  
*(A transfusion episode = any red cells transfused within a 24 hour period)*

- 1
- 2
- 3
- 4
- 5

**If there were more than 5 episodes of post-operative allogeneic red cell transfusion in the 7 post-operative days, please contact us for advice on how to proceed.**

Q64. Did the patient have an adverse reaction to ANY transfusion?

Yes **Now go to Q65**                       No **Now go to Q66**

Q65. What type of blood caused the reaction?     Autologous     Allogeneic

Q65a. Please supply details:

Date	Was the transfusion Pre-op, Intra-op or Post-op?	SHOT category

Q66. Did the patient die during this admission?

Yes **Now go to Q67**                       No **Now go to Q68**

Q67. What was the date of death?

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Q68. What was the date of discharge?

Q69. What was the Hb on or nearest to discharge / death?

g/L **Now go to Q70**

or  Not done **Go to Episode 1 if there was post-operative transfusion with allogeneic blood**

Q70. What was the date of the Hb test?

Please record details of each post-operative transfusion episode:

**Episodes 1 to 5**

a) Date of transfusion

b) Time of transfusion

c) Who made the decision to transfuse?

d) What was the pre transfusion Hb (within 12 hours of transfusion)?

g/L

e) How many units of red cells were given?

f) Was the Hb recorded after each unit of red cells?

Yes  No

g) Did the patient have acute coronary ischaemia?

Yes  No

**\*\*Definition of acute coronary ischaemia: STEMI (ST segment elevated myocardial infarction), NSTEMI (Non ST segment elevation myocardial infarction) unstable angina) within last 14 days.**

h) What was the reason for transfusion?

Active bleeding

*\*Active post operative bleeding defined as bleeding causing systolic Hb <90mmHg, and or heart rate >110bpm, and or return to theatre because of bleeding and or activation of major haemorrhage pathway.*

An Hb <70 g/L without acute coronary syndrome

An Hb <80 g/L with acute coronary syndrome

Other, please state