## Haematology audit template

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| Date of completion  | (To be inserted when completed) |
| Name of lead author/participants | (To be inserted) |
| Specialty | Haematology |
| Title | **An audit of compliance with the British Society for Haematology guidelines on the assessment and management of bleeding risk prior to invasive procedures** |
| Background | The British Society for Haematology (BSH) has published guidance on the assessment and management of bleeding risk prior to invasive procedures.1 This audit will review compliance with some of the recommendations made. |
| Aim & objectives | To review whether: * investigations assessing bleeding risk prior to invasive procedures are performed appropriately.

patients with bleeding risk prior to invasive procedures are being managed appropriately. |
| Standards & criteria | **Criteria range:** 100%, or if not achieved, there is documentation in the case notes that explains the variance. For standards with an \* the criteria range indicates the standard was 100% not done (if not achieved, there is documentation in the case notes that explains the variance).* Routine coagulation screening should not be performed prior to a procedure, as it does not indicate the bleeding risk nor does a normal screen exclude a bleeding disorder.\*
* The routine use of global haemostatic or platelet function testing to assess bleeding risk should not be performed prior to a procedure.\*
* Prior to elective procedures associated with a risk of bleeding, a structured bleeding history including the personal and family history of spontaneous or procedure-related bleeding (e.g. HEMSTOP) should be considered.
* If the bleeding history is positive, referral to a haematologist should be considered for further advice.
* In patients taking antiplatelet agents and/or anticoagulants who also require a procedure, it is recommended that the balance of risks between bleeding and thromboembolism should be discussed during patient consent.
* Patients having interruption of antiplatelets or anticoagulants should do so for the recommended duration before procedures with a risk of bleeding.
* A decision about continuation or cessation of dual antiplatelet therapy (DAPT), prasugrel or ticagrelor medications prior to invasive procedures should be discussed with the patient's relevant specialist for the indication prior to a procedure.
* Testing of the platelet count should not be performed prior to low-risk procedures (e.g. central line insertion), unless there is a known haematological disorder where platelet count may be <30×109/L.\*
* Routine testing of prothrombin time (PT)/international normalised ratio (INR), activated partial thromboplastin time (APTT), fibrinogen and platelet count should not be performed before low-risk procedures in patients with stable liver disease (e.g. therapeutic or diagnostic paracentesis).\*
* A coagulation screen (PT/INR, APTT and fibrinogen) should be performed in patients undergoing a procedure with a high risk of bleeding and liver disease, malnutrition, prolonged antibiotic use and in patients with a risk of coagulopathy (e.g. sepsis/critical care patients).
* A preprocedure INR on patients taking a vitamin K antagonist (VKA) should be performed.
* Vitamin K replacement in patients with an increased INR, secondary to vitamin K deficiency, for example, cholestatic liver disease, malnutrition or prolonged antibiotic use, should be considered.
* Preprocedure vitamin K replacement should not be performed in individuals with cirrhosis without risk factors for vitamin K deficiency.\*
* Routine use of fresh frozen plasma (FFP) or other replacement therapies to correct abnormal coagulation results should not be carried out in patients undergoing a procedure.\*
* Preprocedural testing of fibrinogen in non-critically ill patients should not be performed.\*
* A preprocedural fibrinogen level >1.0 g/L should be aimed for in critically ill patients undergoing a high-risk procedure.
* A platelet transfusion should be considered in patients with a platelet count <30×109/L requiring a tunnelled central venous catheter.
* Thrombopoietin receptor agonists (TPO-RAs) should be considered for high‑risk procedures in patients with liver disease, if the platelet count is <50×109/L.
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| Method | **Sample selection:** * All patients suspected/at risk of bleeding during an invasive procedure in the preceding 12 months.

**Data to be collected on proforma (see below).** |
| Results | (To be completed by the author)The results of this audit show the following compliance with the standards.

| Investigation | No. audited | No compliant | % compliance |
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| **Recommendations** |
| Routine coagulation screening was performed prior to a procedure (target % compliance: 0%) |  |  |  |
| The routine use of global haemostatic or platelet function testing to assess bleeding risk was performed prior to a procedure (target % compliance: 0%) |  |  |  |
| HEMSTOP was completed prior to elective procedures associated with a risk of bleeding |  |  |  |
| If the bleeding history was positive, referral to a haematologist was considered for further advice |  |  |  |
| In patients taking antiplatelet agents and/or anticoagulants who required a procedure, the balance of risks between bleeding and thromboembolism was discussed during patient consent |  |  |  |
| Patients who had interruption of antiplatelets or anticoagulants did so for the recommended duration before procedures with a risk of bleeding  |  |  |  |
| A decision about continuation or cessation of DAPT, prasugrel or ticagrelor medications prior to invasive procedures was discussed with the patient's relevant specialist for the indication prior to a procedure |  |  |  |
| Testing of the platelet count was performed prior to low-risk procedures (e.g. central line insertion), unless there was a known haematological disorder where platelet count was <30×109/L (target % compliance: 0%) |  |  |  |
| Routine testing of PT/INR, APTT, fibrinogen and platelet count was performed before low-risk procedures in patients with stable liver disease (e.g. therapeutic or diagnostic paracentesis) (target % compliance: 0%) |  |  |  |
| A coagulation screen (PT/INR, APTT and fibrinogen) was performed in patients undergoing a procedure with a high risk of bleeding and liver disease, malnutrition, prolonged antibiotic use and in patients with a risk of coagulopathy (e.g. sepsis/critical care patients) |  |  |  |
| A preprocedure INR on patients taking a VKA was performed  |  |  |  |
| Vitamin K replacement in patients with an increased INR, secondary to vitamin K deficiency, for example, cholestatic liver disease, malnutrition or prolonged antibiotic use, was considered |  |  |  |
| Preprocedure vitamin K replacement was performed in individuals with cirrhosis without risk factors for vitamin K deficiency (target % compliance: 0%) |  |  |  |
| Routine use of FFP or other replacement therapies to correct abnormal coagulation results was carried out in patients undergoing a procedure (target % compliance: 0%) |  |  |  |
| Preprocedural testing of fibrinogen in non-critically ill patients was performed (target % compliance: 0%) |  |  |  |
| A preprocedural fibrinogen level >1.0 g/L was aimed for in critically ill patients undergoing a high-risk procedure  |  |  |  |
| A platelet transfusion was considered in patients with a platelet count <30×109/L requiring a tunnelled central venous catheter |  |  |  |
| Thrombopoietin receptor agonists was considered for high-risk procedures in patients with liver disease, if the platelet count was <50×109/L |  |  |  |

**Commentary:** |
| Conclusion | (To be completed by the author) |
| Recommend-ations for improvement | Present the result with recommendations, actions and responsibilities for action and a timescale for implementation. Assign a person(s) responsible to do the work within a timeframe. |
| Action plan | (To be completed by the author – see attached action plan proforma) |
| Re-audit date | (To be completed by the author) |
| References | 1. Lester W, Bent C, Alikhan R, Roberts L, Gordon-Walker T, Trenfield S *et al.* A British Society for Haematology guideline on the assessment and management of bleeding risk prior to invasive procedures. *Br J Haematol* 2024;204:1697–1713.
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## Data collection proforma for the assessment and management of bleeding risk prior to invasive procedures

## Audit reviewing practice

Patient name:

Hospital number:

Date of birth:

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| **Standard** | **1****Yes**  | **2****No** | **3** If shaded box not ticked, was there documentation to explain the variance?**Yes/No** plus free-text comment | **4** Compliant with guideline if shaded box ticked or an appropriate explanation from column 3. **Yes/No**(Record if standard not applicable) |
| **Recommendations** |
| **1**  Routine coagulation screening not performed prior to a procedure (target % compliance: 0%) |  |  |  |  |
| **2** The routine use of global haemostatic or platelet function testing to assess bleeding risk was performed prior to a procedure (target % compliance: 0%) |  |  |  |  |
| **3**  HEMSTOP was completed prior to elective procedures associated with a risk of bleeding |  |  |  |  |
| **4**  If the bleeding history was positive, referral to a haematologist was considered for further advice |  |  |  |  |
| **5**  In patients taking antiplatelet agents and/or anticoagulants who required a procedure, the balance of risks between bleeding and thromboembolism was discussed during patient consent |  |  |  |  |
| **6** Patients who had interruption of antiplatelets or anticoagulants did so for the recommended duration before procedures with a risk of bleeding |  |  |  |  |
| **7**  A decision about continuation or cessation of DAPT, prasugrel or ticagrelor medications prior to invasive procedures was discussed with the patient's relevant specialist for the indication prior to a procedure |  |  |  |  |
| **8**  Testing of the platelet count was performed prior to low-risk procedures (e.g. central line insertion), unless there was a known haematological disorder where platelet count was <30×109/L (target % compliance: 0%) |  |  |  |  |
| **9**  Routine testing of PT/INR, APTT, fibrinogen and platelet count was performed before low-risk procedures in patients with stable liver disease (e.g. therapeutic or diagnostic paracentesis) (target % compliance: 0%) |  |  |  |  |
| **10**  A coagulation screen (PT/INR, APTT and fibrinogen) was performed in patients undergoing a procedure with a high risk of bleeding and liver disease, malnutrition, prolonged antibiotic use and in patients with a risk of coagulopathy (e.g. sepsis/critical care patients) |  |  |  |  |
| **11**  A preprocedure INR on patients taking a VKA was performed |  |  |  |  |
| **12**  Vitamin K replacement in patients with an increased INR, secondary to vitamin K deficiency, for example, cholestatic liver disease, malnutrition or prolonged antibiotic use, was considered |  |  |  |  |
| **13** Preprocedure vitamin K replacement was performed in individuals with cirrhosis without risk factors for vitamin K deficiency (target % compliance: 0%) |  |  |  |  |
| **14** Routine use of FFP or other replacement therapies to correct abnormal coagulation results was carried out in patients undergoing a procedure (target % compliance: 0%) |  |  |  |  |
| **15** Preprocedural testing of fibrinogen in non-critically ill patients was performed (target % compliance: 0%) |  |  |  |  |
| **16** A preprocedural fibrinogen level >1.0 g/L was aimed for in critically ill patients undergoing a high-risk procedure  |  |  |  |  |
| **17** A platelet transfusion was considered in patients with a platelet count <30×109/L requiring a tunnelled central venous catheter |  |  |  |  |
| **18** Thrombopoietin receptor agonists was considered for high‑risk procedures in patients with liver disease, if the platelet count was <50×109/L |  |  |  |  |

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| **Audit action plan** An audit of compliance with the BSH guidelines on the assessment and management of bleeding risk prior to invasive procedures |
| Audit recommendation | Objective | Action | Timescale | Barriers and constraints | Outcome | Monitoring |
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