RECOMMENDATIONS FOR STAFF WORKING IN SURGICAL OUTPATIENTS AND PREOPERATIVE ASSESSMENT SERVICES

Surgical and preoperative assessment teams should:

- Ensure Hb is checked as early as possible for patients being considered for surgery according to NICE preoperative testing guidelines
- Consider developing pathways to ensure early Hb check:
  - for example, if a patient requires a diagnostic CT scan with renal blood test before contrast, Hb should also be measured
  - for example, point of care testing, such as haemoglobin concentration screen (Hemocue®) or blood gas analysis (venous or arterial)
- Be aware of the Hb required for a diagnosis of anaemia (see Figure 1)
- Assess for causes of newly identified anaemia if patient undergoing surgical procedures with anticipated moderate-to-high (>500ml) blood loss.[26] This usually requires:
  - Thorough history and appropriate clinical examination
  - Accurate medication history including use of anticoagulant or antiplatelet medications or Non-Steroidal Anti-Inflammatory drugs (NSAIDs)
  - Assessment of frailty and cognition for all patients aged over 65 years
  - Identification of any previous delays in obtaining blood products for the patient due to antibodies
  - Blood tests:
    - Serum ferritin (SF)
    - Transferrin saturations (T-Sat)
    - C Reactive Protein (CRP)
    - Renal function (Renal profile, Creatinine, eGFR)
    - Folate and Vitamin B12
    - Reticulocyte haemoglobin content (CHr) where available
  - If relevant, also consider:
    - Liver function tests
    - Tests for coeliac disease if malabsorption likely
- Clearly document the decision to continue, withhold or discontinue any medications in the medical notes
- Give advice to patients about whether to stop anticoagulants (and other medications that may increase the risk of bleeding) before elective surgery, and if so how and when (see UKCPA for the latest recommendations)
- Proceed with surgery if the patient is undergoing minor surgery, or surgery with blood loss expected ≤500ml whilst anaemia investigation and treatment continues[26]
- Use a shared decision making process to inform postponement of major surgery to facilitate diagnosis and management of anaemia[26]

- Document whether the patient is being referred back to primary care for further assessment and inform the patient accordingly. This information should include detail on when results might be available and the Hb threshold for surgery to proceed
- Ensure documentation of who will review results of investigations for cause of anaemia and plan further treatment
- Investigate for malignancy in case of new true iron deficiency anaemia, and simultaneously start replacement of iron[26]
- Discuss treatment options for the type of anaemia identified with the patient (see Figure 7). For iron deficiency anaemia and functional iron deficiency:
  - PBM should start at the time surgery is booked and continue through to full recovery
  - If the interval before surgery is at least four weeks and there are no contraindications, provide dietary advice and start oral iron (any commercially available iron preparation – one tablet per day or one/two tablets alternate days (may be as effective but better tolerated).[5] (More detail is included in the section on iron dosing)
  - If surgery is within four weeks, then consider postponing surgery or initiating IV iron therapy
  - If oral iron is contraindicated or poorly tolerated, then IV iron should be administered
  - Routine preoperative use of erythropoietin is not recommended; however, it may be beneficial in functional iron deficiency where there is insufficient response to iron replacement[37]
  - Non-anaemic iron deficiency requires specific strategies for detection and treatment. If there is significant expected intraoperative blood loss and/or risk of developing postoperative anaemia, consider oral iron administration
  - Document patient preference on use of blood products
  - Provide advice to patients on optimisation of physiological reserve, eg physical activity and exercise[38]
- Ensure coexisting medical comorbidities are assessed and optimised to improve physiological reserve (eg optimisation of chronic obstructive airways disease or cardiac disease[39]) and to ensure medical conditions that contribute to anaemia are identified
- Consider specific preoperative interventions to minimise intraoperative blood loss, eg embolisation of tumours.[40]