## Part 2: Guidelines on clinical management

### Preoperative treatment of anemia

* The use of iron therapy and ESAs, according to clinical indications, is supported by several international guidelines.1-6
* Recommendations from selected guidelines retrieved by our literature search are presented in **Supplementary table 2**.
* In the SIAARTI recommendations, oral iron supplementation is recommended if surgery is scheduled >6 weeks from diagnosis of iron deficiency, while IV iron is recommended in patients with functional or absolute iron deficiency, and those who do not tolerate or do not respond to oral administration.1
* Australian PBM guidelines suggest that ESAs may be indicated for anemia of chronic disease or anemia of inflammation and recommend that if an ESA is indicated it must be combined with iron therapy.5
* The other guidelines are broadly consistent with these recommendations, although a German guideline suggests use of ESA only in patients with anemia of chronic disease or renal anemia in the absence of iron deficiency.6

#### Cardiac surgery

* Guidelines from the International Society for Minimally Invasive Cardiothoracic Surgery (ISMICS) on perioperative blood management in cardiac surgery, published in 2012: “It is reasonable to administer erythropoietin preoperatively to increase red blood cell (RBC) mass in patients who are anemic or refuse blood products (such as for Jehovah’s Witness faith) or who are likely to have postoperative anemia”.7

#### Orthopedic surgery

* Guidelines from the Network for Advancement of Transfusion Alternatives (NATA), published in 2011, included an algorithm for detecting, evaluating and managing preoperative anemia in orthopedic surgery patients.8 Iron supplementation was recommended for IDA – either oral or (in case oral therapy is poorly tolerated/poorly absorbed or the time to surgery is short) IV. Administration of an ESA in combination with iron supplementation was endorsed for patients with anemia of chronic disease. The authors concluded that “Anemia should be viewed as a serious and treatable medical condition.”

### Perioperative transfusion of RBCs

* Guidelines on RBC transfusion thresholds identified by our literature search are presented in **Supplementary table 3**.
* Recommendations from the AABB (USA), National Institute for Health and Care Excellence (NICE; UK) and National Blood Authority (NBA; Australia) are consistent in recommending perioperative transfusion of RBCs only when Hb levels are below 7–8 g/dL.2, 5, 9

### Postoperative anemia

* An international consensus statement on the management of postoperative anemia after major surgical procedures was published in 2018.10 For iron supplementation, early IV iron was recommended in preference to oral therapy. Additional treatment with an ESA was suggested for non-cancer patients with severe postoperative anemia and decreased erythropoiesis due to inflammation, or those declining blood transfusions.
* The American Society of Anesthesiologists Committee on Patient Blood Management similarly advocate IV iron treatment for postoperative iron deficiency.3

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