Guideline on the Management of Anaemia in Adults

Department / Service:	Blood Transfusion and Haematology
Originator:	Dr Sangam Hebballi
Accountable Director:	
Approved by:	Consultant Haematologists 18/11/2024 Trust Transfusion Committee 22/01/2025
Approved by Medicines Safety Committee: *Where medicines included in guideline*	12th March 2025
Date of Approval:	6th May 2025
Review Date: **This is the most current document and should be used until a revised version is in place**	6th May 2028
Target Organisation(s)	Worcestershire Acute Hospitals NHS Trust
Target Departments	All Medical and Surgical departments
Target staff categories	All Medical and Nursing Staff

Plan Overview:

Anaemia is defined as haemoglobin <130g/L in adult male and <120g/L in non-pregnant adult female.

Purpose and scope of Guideline:

- Aid prompt recognition, appropriate investigation and treatment of anaemia
- Identify patients with iron deficiency anaemia, encourage use of oral and intravenous iron treatments; and highlight importance of gastro-intestinal investigations to identify the underlying cause/occult malignancy
- Prevent unnecessary red cell transfusions and any related complications
- Identify patients who may benefit from specialist haematology advice

Key amendments to this Document:

Date	Amendment	By:
	New Guideline	

Contents:

1. Stable Anaemia

- Stable anaemia is defined as anaemia without any cardiovascular compromise attributable to anaemia and no active haemorrhage.
- For major haemorrhage, please see the major haemorrhage protocol (http://whitsweb/KeyDocs/KeyDocs/DownloadFile/1100
- For acute upper gastro-intestinal bleeding (AUGIB), please the Trust guideline (http://whitsweb/KeyDocs/KeyDocs/DownloadFile/2994)

1.1 Identify and treat the cause for anaemia

- Management of anaemia requires identification and treatment of the underlying cause
- Blood transfusion usually not needed in the absence of active bleeding; can often be avoided through diagnostic workup (See below)

1.2 Use restrictive transfusion thresholds

- Restrictive thresholds reduce morbidity and protect patients from exposure to blood products
- Always transfuse if symptomatic in addition to treatment of the underlying cause
- If no active bleeding and a reversible cause is identified, prescribe the minimum number of units to achieve a target Hb level.
- Assume an increment of 10g/L per unit for a 70kg adult.

Red cell transfusion thresholds		
R1	Acute Bleeding	Once normovolaemia achieved, frequent measurement of Hb should be used – see suggested thresholds below
R2	Stable Anaemia (No active bleeding)	Hb <70 g/l Use a target Hb of 70-90g/L
R3	Stable Anaemia & ischaemic heart disease	Hb <80g/l Use a target Hb of 80-100g/L
R4	Transfusion dependent anaemia (e.g. MDS)	Maintain an Hb which prevents symptoms. Suggest an initial threshold of 80g/L then adjust as required.
R5	Radiotherapy	Limited data for maintaining Hb of 110g/L.

1.3 Don't give unit two without review

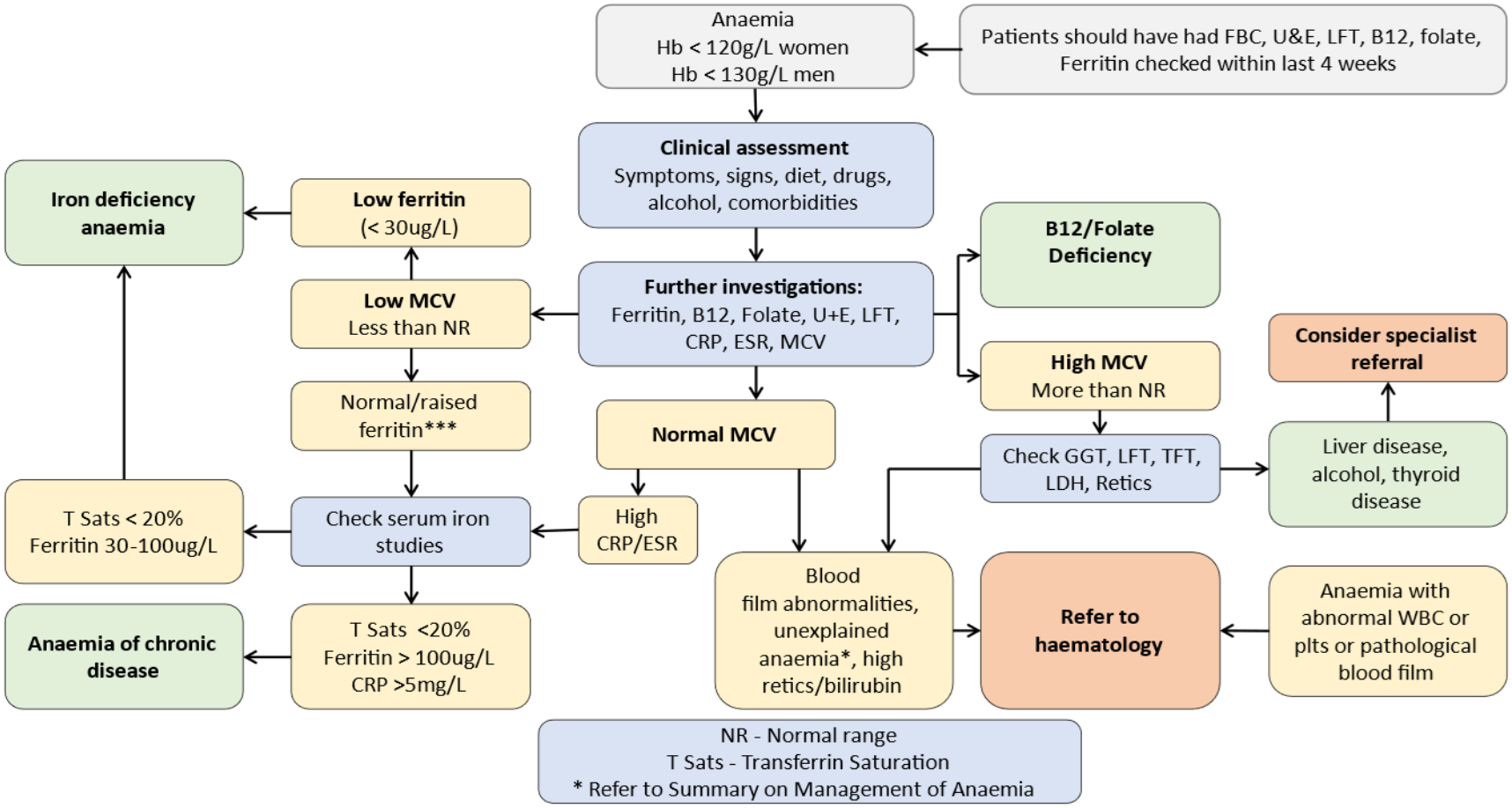
- Clinically reassess your patient after each unit transfused, and check a haemoglobin level
  i. Is your patient still symptomatic?
  ii. Is further transfusion appropriate?

- Only order one unit at a time for non-bleeding patients
- Document patient consent and the reason for transfusion

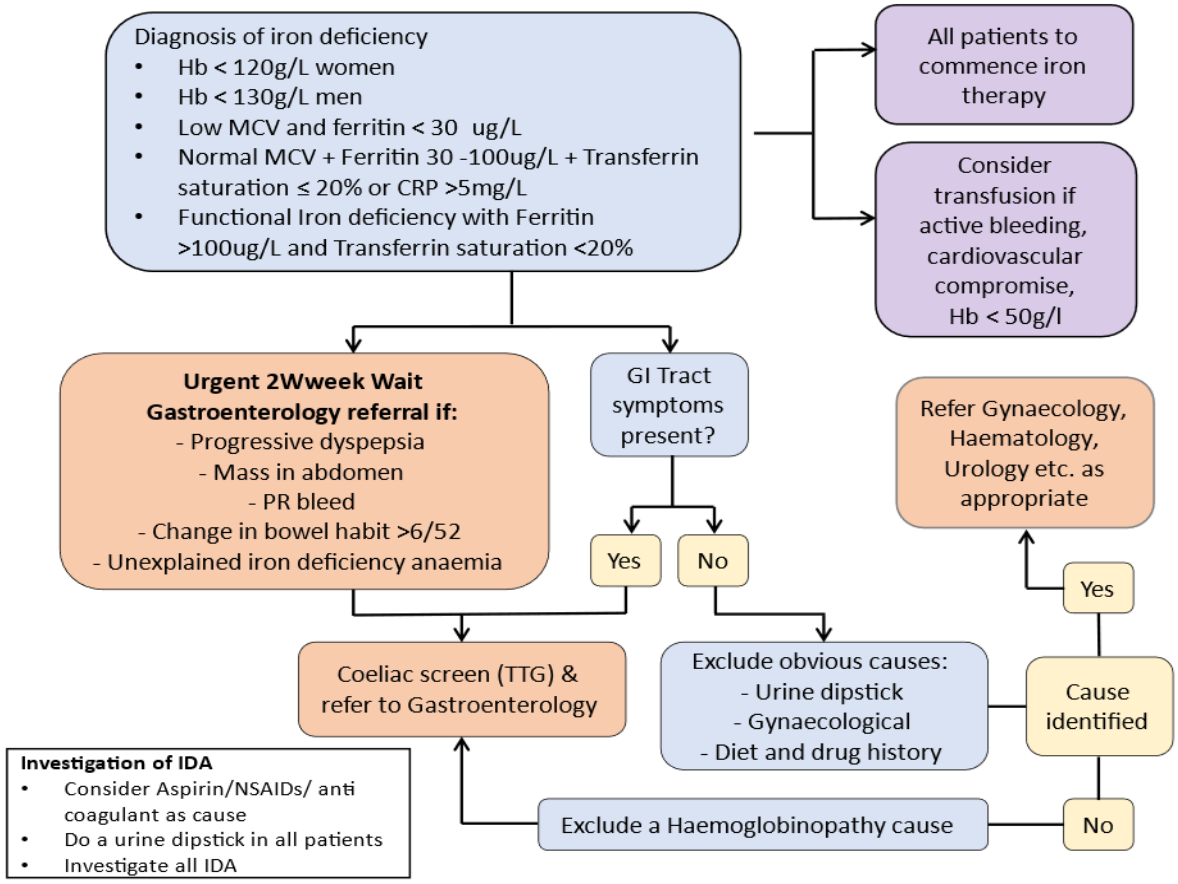
1.4 Patient Blood Management

- Is a multidisciplinary, evidence-based approach to optimising the care of patients who might need a blood transfusion
- To promote the safe, rational, evidence based and effective use of all blood components and their alternatives
- For latest guidance and resources click this link https://nationalbloodtransfusion.co.uk/working-group/patient-blood-management

2. Diagnostic approach to the Anaemia



3. Iron Deficiency Anaemia



Treatment of Iron Deficiency Anaemia (IDA)

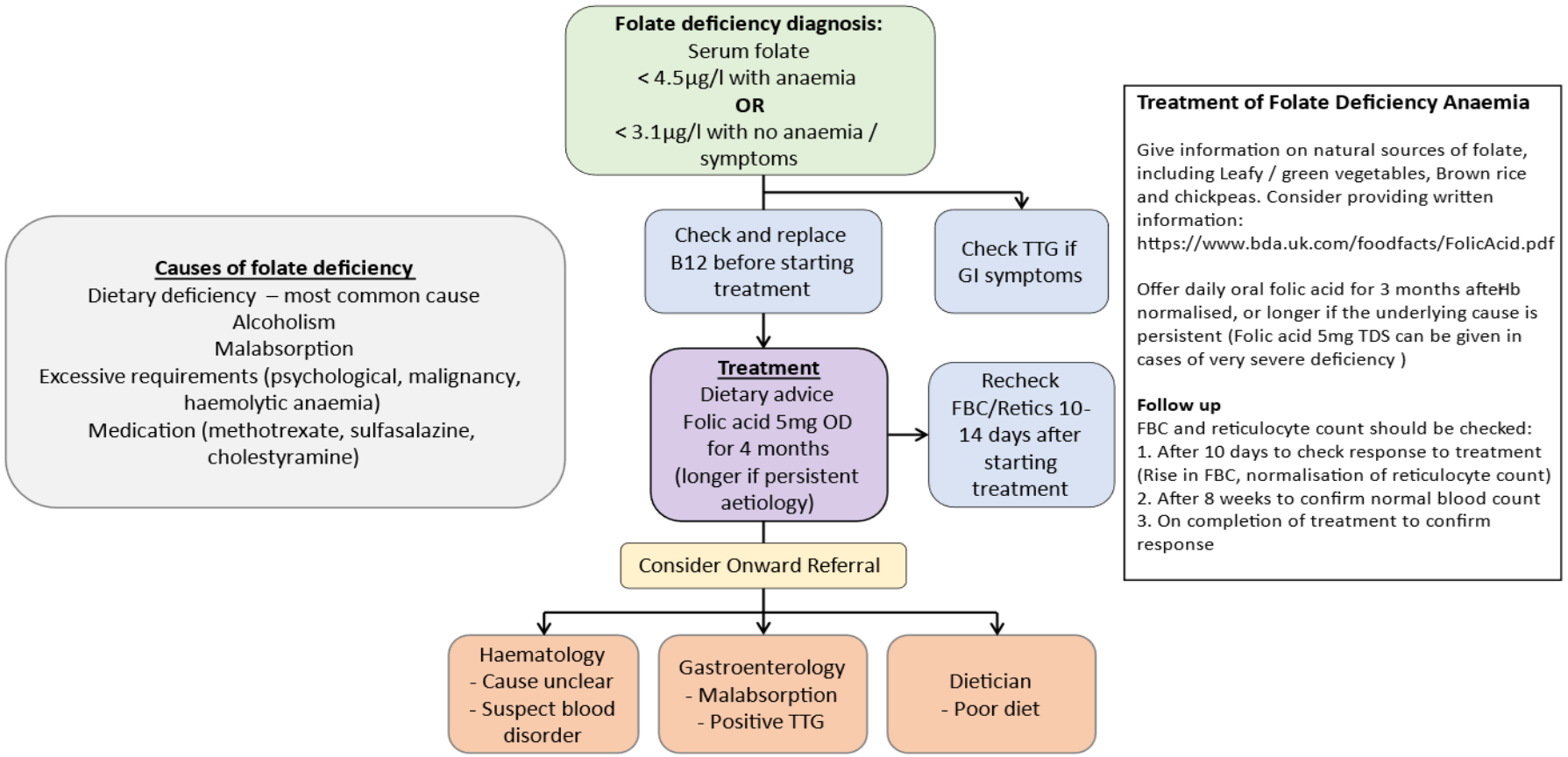
Oral Iron Therapy
1. Patients should be advised to take iron on an empty stomach, prior to usual medications.
Ferrous Sulphate 200mg OD; once alternate days in mild IDA
Ferrous Fumarate 210mg OD; once alternate days in mild IDA
2. Patients should be counselled regarding diet including details of iron rich food sources. Consider providing written information:
https://www.bda.uk.com/foodfacts/iron_food_fact_sheet.pdf

IV Iron Therapy
1. IV iron should be used in patients who fail to respond to oral iron, or are intolerant of oral iron.
2. Consider as first line if:
o History of oral iron intolerance or poor compliance
o Impaired gastrointestinal absorption (Metastatic Carcinoma, IBD and Duodenal pathology)
o Major surgery planned within 3 weeks
o Patients on Haemodialysis

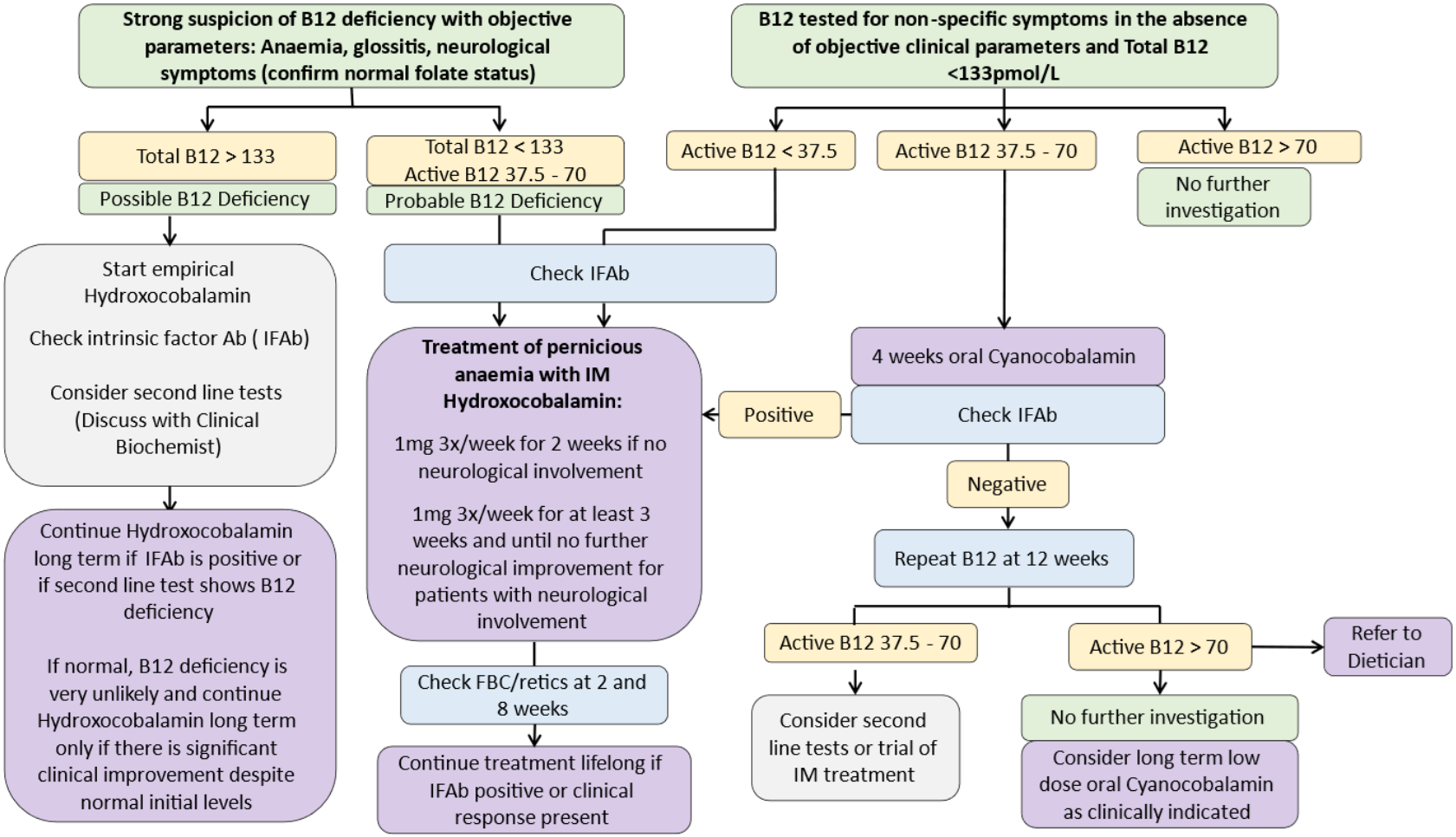
Blood Transfusion
Blood transfusion should be reserved for those with risk of further bleeding, imminent cardiac compromise or disabling symptoms requiring immediate attention. Give alongside iron therapy

Follow-up
1. Check FBC at 2 weeks to check treatment response
2. Check FBC at 12 weeks to confirm resolution of anaemia
3. Check FBC / Ferritin / TSats on completion of treatment
4. Continue Iron supplementation 3 months after normalisation of Hb to replenish Iron stores
5. Capsule endoscopy if initial GI investigations are normal

4. Folate deficiency Anaemia



5. Vitamin B12 Deficiency Anaemia



Causes of B12 Deficiency:

- Pernicious anaemia
- Gastric causes: Gastrectomy, Gastric resection
- Inadequate dietary intake of B12 e.g.:
  - Intestinal causes, Ileal resection, Crohn's disease
- Medicines: colchicine, metformin, anticonvulsants, long term PPIs and H2 blockers
- Malabsorption associated with gastric atrophy; either age related or associated with long term PPI use - likely cause for 30-50% of cases with subclinical B12 deficiency
- Diet (e.g. vegans) may not be the cause, or the only cause, of a person's vitamin B12 deficiency.

Referral to Gastroenterology if:

- Malabsorption not pernicious anaemia
- Pernicious anaemia with IDA/ folate deficiency
- GI symptoms (URGENT if ?Gastric malignancy)

Interpretation of B12 Results:

- When offering or interpreting an initial test, ask patients if they are already using an over -the-counter preparation containing vitamin B12.
- Biochemistry lab will reflex an Active B12 on all low Total B12
- Drug induced B12 deficiency is rare; should only be assessed in patients taking medication if objective evidence of deficiency is present

Indeterminate B12 Results:

- Total B12 <133 and Active B12 >70 or Total B12 <133 and Active B12 37.5 – 70
- Replace with IM Hydroxocobalamin if symptomatic
- Advice on dietary information and 4 weeks of oral Cyanocobalamin, if asymptomatic
- Advise to seek medical help if they develop symptoms or signs of deficiency
- Recheck vitamin B12 levels and follow up in 3 months.

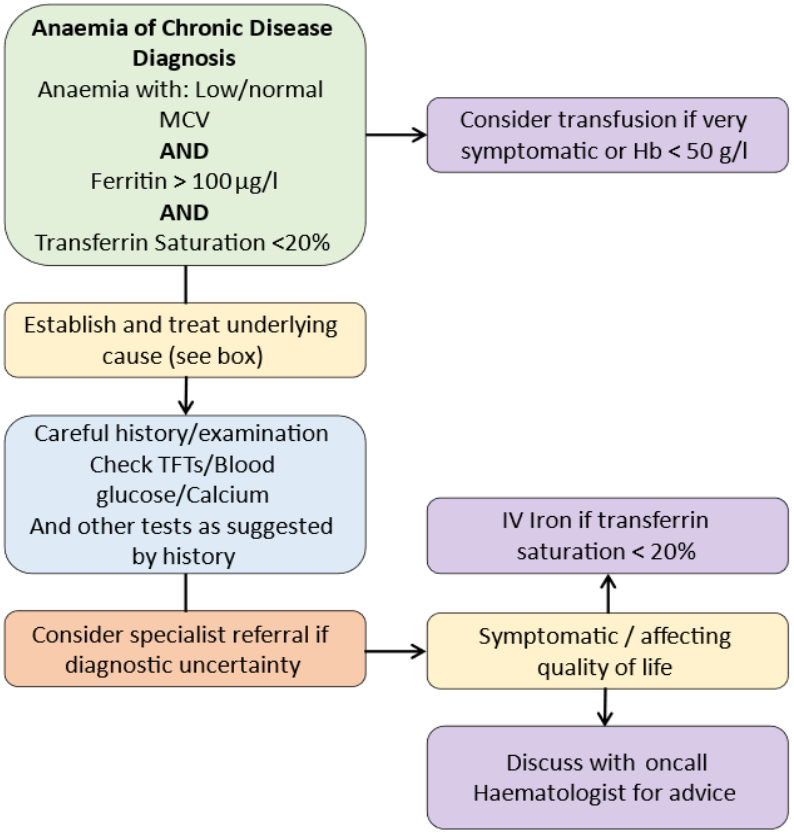
Key Points:

- If B12 deficiency is thought to be due to a restricted diet, start 50 –150 micrograms Cyanocobalamin daily
- Cyanocobalamin 2mg od considered when the cause is malabsorption NOT caused by autoimmune gastritis, total gastrectomy, or a complete terminal ileal resection
- If IFAB is present, pernicious anaemia is very likely, but its absence does not rule out pernicious anaemia

Long-term treatment for Dietary B12 deficiency

- Oral Cyanocobalamin 50 –150 micrograms OD between meals, or 6 monthly IM Hydroxocobalamin 1mg (may be preferable in the elderly likely to have malabsorption)
- Oral Cyanocobalamin is non -formulary and it's prescription is not supported at NHS expense in Hereford and Worcestershire
- Advise patients to buy oral Cyanocobalamin 50 - 150 micrograms OD or 1mg b d between meals, over the counter; the dose and duration need to be communicated via a letter to the patient or done on a FP10 prescription across all sites.
- In vegans, this treatment may need to be life -long
- In non-vegans oral Cyanocobalamin can be stopped once vitamin B12 levels have been corrected and diet has improved – but monitor B12 levels 6 monthly
- Advise foods rich in vitamin B12, eg: foods fortified with vitamin B12 - some soy products, and some breakfast cereals and breads, meat, eggs, and dairy products. Consider providing a written information leaflet: https://ods.od.nih.gov/pdf/factsheets/VitaminB12 - Consumer.pdf

6. Anaemia of Chronic Disease



Causes of Anaemia or Chronic disease

- Chronic infection (eg. tuberculosis, chronic fungal infections, hepatitis, osteomyelitis, HIV)
- Acute infection (eg. pneumonia, pyelonephritis, endocarditis, cellulitis, and soft tissue infections)
- Chronic disease (eg. chronic kidney disease, diabetes mellitus, obesity, congestive heart failure, major recent thrombosis, chronic pulmonary disease/COPD)
- Malignancy
- Collagen vascular and autoimmune disorders (eg. rheumatoid arthritis, SLE, dermatomyositis, giant cell arteritis, polymyalgia rheumatica, scleroderma, inflammatory bowel disease
- Critical illness and major trauma

Definition

Anaemia due to an inflammation - mediated reduction in RBC production and survival. Characterised by mild to moderate anaemia that is either normocytic normochromic or microcytic hypochromic with normal RBC morphology. Ferritin and ESR/CRP elevated.

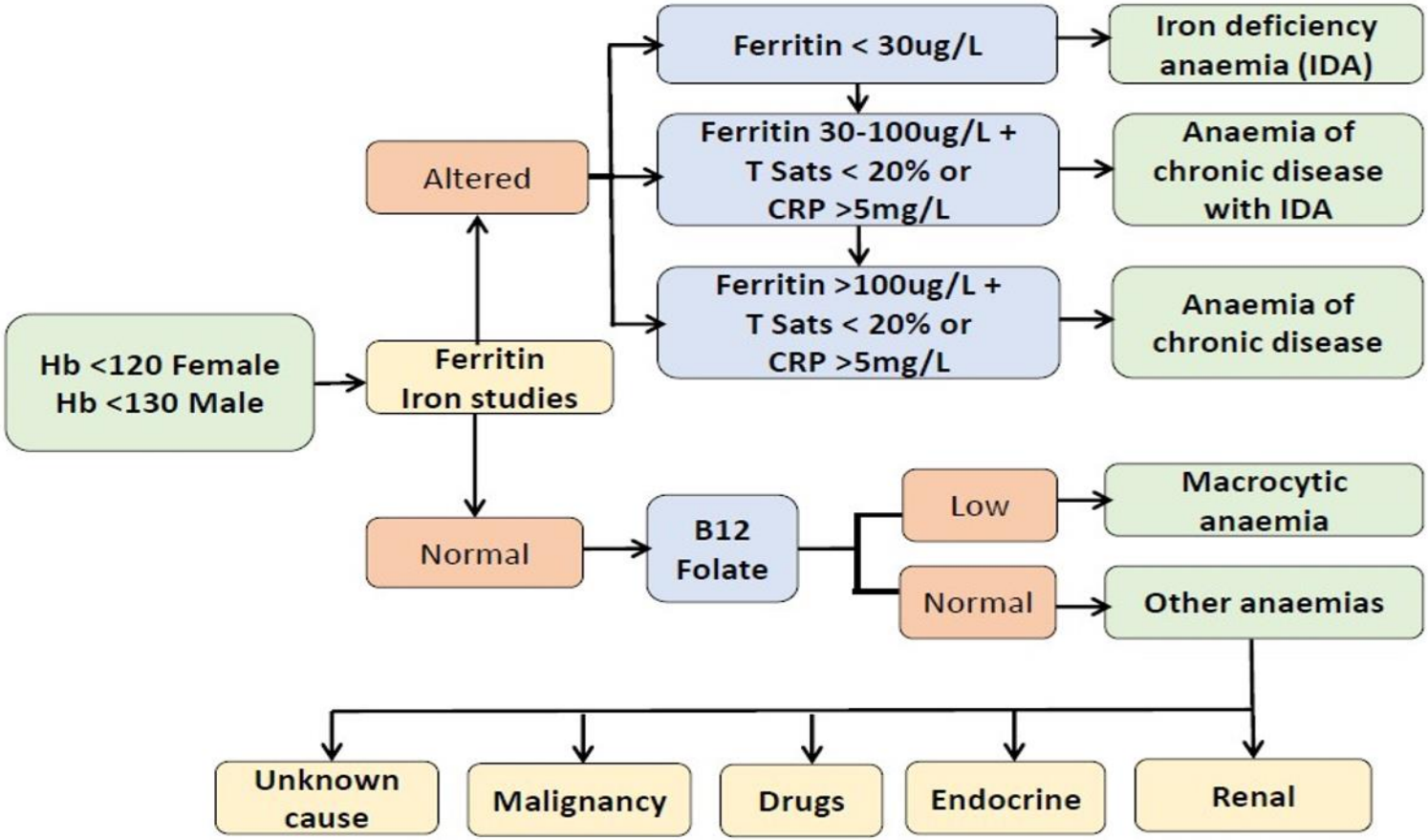
Clinical Assessment

- History of an autoimmune, malignant, or infectious disorder, or of recent major surgery, trauma, or critical illness.
- Bleeding is rare and alternative diagnoses should be considered.

Investigations

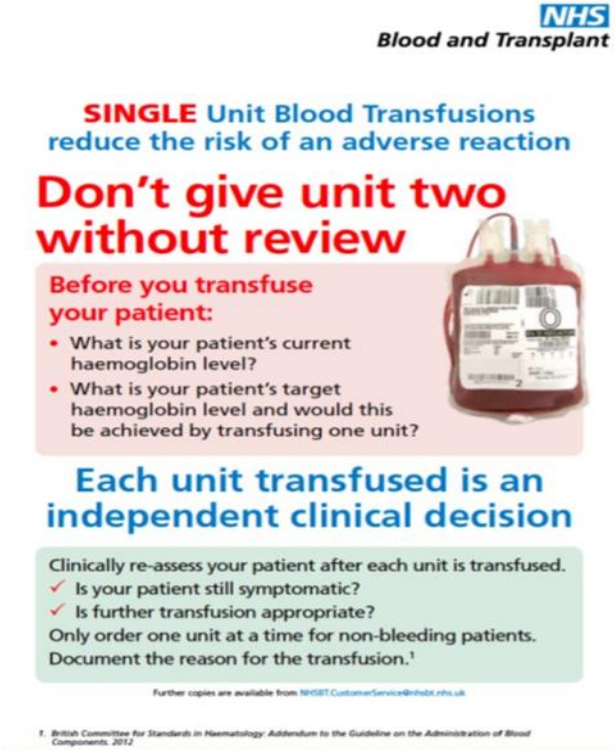
- FBC, blood film, reticulocyte count, ferritin, serum iron studies, CRP/ ESR, creatinine, LDH, and liver function tests.
- Exclude alternate causes of anaemia (Iron, B12, Folate deficiency)

7. Summary on Interpretation of Haematinics



8. Better Blood Transfusion for patients with Stable Anaemia

- **Identify and treat the cause of Anaemia**
  - Management of anaemia requires identification and treatment of the underlying cause
  - Remember to check Ferritin, B12, folate before starting any red cell transfusion
  - Most common cause of anaemia is iron deficiency so investigate the cause: gastro - intestinal, menstrual/ gynaecological, urological, aspirin, NSAIDs, anticoagulants, poor diet
  - Haematinic Replacement therapy for any deficiencies should be considered immediately
  - After excluding haematinic deficiency, establish if it is anaemia of chronic disease
  - Consider Haematology referral following initial workup to assist in diagnosis and management of Unexplained Anaemia
- **Iron Replacement for Iron Deficiency Anaemia**
  - Mild – moderate cases to be treated with oral iron as once or twice daily, encourage Vitamin C (orange juice) with meals, avoid tea/ coffee within 1 hour of taking medication
  - Intravenous iron for patients who are intolerant, unresponsive to oral iron, non -compliant, functional iron deficiency or if there is a need to raise iron levels rapidly(prior to surgery)
  - Anaemia with ferritin <100µg/L, IV iron will be needed to prevent the patient's haemoglobin dropping and causing symptoms of anaemia
  - Refer to the NHSBT information for Clinician on Iron deficiency and iron deficiency anaemia https://nhsbtdbe.blob.core.windows.net/umbraco -assets-corp/25358/2-ida-final.pdf
  - Refer to the Trust Clinical Guideline for the use of Intravenous Iron http://whitsweb/KeyDocs/KeyDocs/DownloadFile/1103
- **Use Restrictive Transfusion Thresholds**
  - Always transfuse if symptomatic / bleeding in addition to treatment of underlying cause
  - If no active bleeding, reassess the patient after each unit of red cell transfusion
  - Transfusions given for haematinic deficiencies with no severe symptoms are reportable to Serious Hazards of Transfusion, UK (SHOT)



Give information leaflet on Anaemia to patients
https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/21977/inf1268-3-feb-2021-anaemia-patient-information.pdf
NICE Blood Transfusion Guideline NG24
https://www.nice.org.uk/guidance/ng24

9. References

- **International consensus statement on the peri-operative management of anaemia and iron deficiency** M. Muñoz, A. G. Acheson, M. Auerbach, M. Besser, O. Habler, H. Kehlet, G. M. Liumbruno, S. Lasocki, P. Meybohm, R. Rao Baikady, T. Richards, A. Shander, C. So-Osman, D. R. Spahn, A. A. Klein December 2016. https://doi.org/10.1111/anae.13773
- **British Committee for Standards in Haematology Guidelines on the Identification and Management of Pre-Operative Anaemia** Alwyn Kotzé, Andrea Harris, Charles Baker, Tariq Iqbal, Nick Lavies, Toby Richards, Kate Ryan, Craig Taylor, Dafydd Thomas September 2015 https://doi.org/10.1111/bjh.13623
- **Anemia of inflammation** Guenter Weiss,1,2 Tomas Ganz,3 and Lawrence T. Goodnough4,5 1 Department of Internal Medicine II and 2 Christian Doppler Laboratory for Iron Metabolism and Anemia Research, Medical University of Innsbruck, Innsbruck, Austria; 3 Department of Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA; and 4 Department of Pathology and 5 Department of Medicine (Hematology), Stanford University, Stanford, CA January 2019 https://doi.org/10.1182/blood-2018-06-856500
- Anaemia Patient Information leaflet https://hospital.blood.co.uk/transfusionleaflets
- Blood Transfusion Patient Information Leaflet NHSBT https://hospital.blood.co.uk/transfusionleaflets
- NICE Guidance Blood Transfusion Guidelines NG24 https://www.nice.org.uk/guidance/ng24
- The administration of blood components: a British Society for Haematology Guideline S. Robinson, A. Harris, S. Atkinson, C. Atterbury, P. Bolton-Maggs, C. Elliott, T. Hawkins, E. Hazra, C. Howell, H. New, T. Shackleton, K. Shreeve, C. Taylor Nov 2017 https://doi.org/10.1111/tme.12481
- Clinical Guideline on Severe Anaemia, Dr S Morton University Hospitals Birmingham
- Iron deficiency and iron deficiency anaemia NHSBT https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/25358/2-ida-final.pdf
- Vitamin B12 deficiency in over 16s: Diagnosis and management NICE guideline [NG239] https://www.nice.org.uk/guidance/ng239
- B12 deficiency, HWICS Guideline for Primary Care Guidelines_for_the_Management_of_Vitamin_B12_Deficiency_v4.pdf

Monitoring Tool

This should include realistic goals, timeframes and measurable outcomes.

How will monitoring be carried out?

Who will monitor compliance with the guideline?

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	Patients with anaemia, should have haematinics checked	Audit	Two yearly	Staff involved in the treatment of patients with anaemia	Audit presentation at Trust Transfusion Committee	Two yearly
	Red cell transfusion for symptomatic anaemia	Audit				
	Reassess the patient after each unit of red transfusion regarding further red cell transfusion	Audit				

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Consultant Haematologists
Pharmacy

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee
Trust Transfusion Committee
Medicines Safety Committee

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form;

NHS
Worcestershire
Acute Hospitals
NHS Trust

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust	√	Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust		Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	**Dr Sangam Hebballi**

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Dr Sangam Hebballi	**Consultant Haematologist**	**sangam.hebballi@nhs.net**
	Laura Walters	**Lead Transfusion Practitioner**	**laura.walters12@nhs.net**
Date assessment completed	**10.04.2025**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title: Guideline on the Management of Anaemia in Adults**
What is the aim, purpose and/or intended outcomes of	• Aid prompt recognition, appropriate investigation and treatment of anaemia

this Activity?	• Identify patients with iron deficiency anaemia, encourage use of oral and intravenous iron treatments; and highlight importance of gastro-intestinal investigations to identify the underlying cause/occult malignancy • Prevent unnecessary red cell transfusions • Identify patients who may benefit from specialist haematology advice			
Who will be affected by the development & implementation of this activity?	❑	Service User	❑	Staff
	√	Patient	❑	Communities
	❑	Carers	❑	Other _____
	❑	Visitors	❑	
Is this:	❑ Review of an existing activity √ New activity ❑ Planning to withdraw or reduce a service, activity or presence?			
What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	Refer to the list of References in Section 9 of the Policy			
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Haematology Consultants Trust Transfusion Committee Pharmacy Medicines safety committee ISAG			
Summary of relevant findings				

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		√		
Disability		√		
Gender Reassignment		√		
Marriage & Civil Partnerships		√		
Pregnancy & Maternity		√		
Race including Traveling Communities		√		
Religion & Belief		√		

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Sex		√		
Sexual Orientation		√		
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic deprivation, travelling communities etc.)		√		
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		√		

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
	NA	.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.
1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	Laura Walters
Date signed	10.04.2025
Comments:	
Signature of person the Leader Person for this activity	Dr Sangam Hebballi Consultant Haematologist
Date signed	10.04.2025
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	No

If the response to any of the above is yes, please complete a business case which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval