Clinical Guideline

IV FERRIC DERISOMALTOSE (PREVIOUSLY CALLED MONOFER) FOR IRON DEFICIENCY ANAEMIA

SETTING UHBW (Weston-site, all wards/departments)

FOR STAFF All staff

PATIENTS For administration to adult patients with iron-deficiency anaemia that warrants intravenous replacement

Introduction

Iron-deficiency anaemia (IDA) is defined as a haemoglobin level <120g/L in non-pregnant adult biological women, or <130g/L in adult biological males, due to low iron stores in body.

The main causes of IDA are:

- Absolute iron deficiency, usually through GI losses (with/without inflammation)
- Functional iron deficiency characterised by normal iron stores in bone marrow (normal serum ferritin) but reduced iron levels in serum and macrophages (reduced transferrin)

	Absolute iron deficiency	Absolute iron deficiency in the presence of inflammation	Functional iron deficiency
Iron studies	Ferritin <30µg/L	Ferritin* 30-100µg/L and Transferrin saturation (TSAT) <20% OR CRP >5mg/L	Ferritin* >100µg/L and Transferrin saturation (TSAT) <20% OR CRP >5mg/L

*N.B. Ferritin can be falsely elevated as an acute inflammatory marker, being an acute phase reactant.

Evidence of a therapeutic response can be seen within a few days of administration with an increase in the reticulocyte count. Serum ferritin should peak within a few days after and will slowly return to baseline after about 3 weeks.

The intravenous route can be used if:

- A rapid effect is important
- Oral preparations are likely to be ineffective (e.g. malabsorption)
- Oral medications cannot be tolerated - two or more iron preparations must have been trialled with little or no response (see BNSSG Remedy for formulary iron preparations available)
- Adherence to oral medications is suspected to be poor

Guidance

Contra-indications

- Patients with known hypersensitivity to the active ingredient, any of the excipients, or to other parenteral iron preparations
- Patients with iron overload or disturbances in utilisation of iron e.g. haemochromatosis,

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hemosiderosis
- Anaemia from other causes, e.g. haemolytic anaemia
- First trimester of pregnancy
- Decompensated liver disease (e.g. where alanine aminotransferase and/or aspartate aminotransferase > 3 times upper limit of normal)
- Porphyria
- Active infection (as theoretical potential for worsening) such as sepsis, bacteraemia - consider delaying iron administration until patient acutely well
- Areas with no cardio-pulmonary resuscitation
- Parental iron administration <7 days ago (risk of iron overload)

Cautions

Assess benefits vs. risks in patients with:

- Pre-existing allergies (drug or non-drug, consider investigating true allergy status)
- Severe asthma, eczema, or another atopic allergy
- Autoimmune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis)
- Mild hepatic impairment (see above for contraindications)
- Pregnancy second or third trimesters: use only if the benefit outweighs the potential risks for both mother and foetus
- Previous unsuccessful parental iron administration

Please note, oral iron should not be given until 5 days after the last injection of ferric derisomaltose; this is due to the upregulation of hepcidin, preventing further iron absorption.

Interactions

See BNF for full interactions list.

Severe interactions include: baloxavir marboxil, clozapine, eltrombopag.

Adverse Effects

Hypersensitivity reactions including serious and potentially fatal anaphylactic reactions, sudden onset of respiratory difficulty, cardiovascular collapse, urticaria, rash and nausea.
The risk is increased for patients with known allergies including drug allergies, with a history of severe asthma, eczema or other atopic allergy, and with immune or inflammatory conditions (e.g. systemic lupus erythematosus, rheumatoid arthritis).
These reactions can occur even when previous administration has been tolerated. To minimise risk keep the number of single IV iron administrations to a minimum.

Hypotensive episodes may occur if IV injection is administered too rapidly. Facial flushing, acute chest pain, back pain and shortness of breath can occur and may mimic symptoms of early anaphylaxis. The infusion should be stopped and the patient's vital signs should be assessed. These symptoms disappear if the infusion is stopped and typically do not recur if restarted at a lower infusion rate.

Common/very common side effects:
Dizziness; flushing; headache; hypertension; hypophosphatemia; hypotension; nausea; skin reactions; taste altered

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Advice for patients

Inform patients of the risk and potential seriousness of a hypersensitivity reaction before every administration. Patients should be informed of the relevant symptoms and advised to tell their doctor or nurse straight away if any of these occur, e.g. rash, tightness of the throat, wheezing.

Also inform the patient about common and relevant risks from the adverse reactions table: https://www.medicines.org.uk/emc/medicine/23669#CLINICAL_PRECAUTIONS

Risk of anaphylaxis

Whilst anaphylaxis is rare (1/10,000 to 1/1000 administrations), only administer ferric derisomaltose when resuscitation equipment, and staff trained to evaluate and manage anaphylactic reactions, are immediately available (therefore preferably between 9am-4pm).

Caution is needed with every dose of IV iron, even if previous administrations have been well tolerated – see Medicines & Healthcare products Regulatory Agency (MHRA) alert: http://www.mhra.gov.uk/home/groups/spcpil/documents/spcpil/con1556856800508.pdf

See Appendix 1 for flowchart.

Dosing

Ferric derisomaltose is given as an infusion with a maximum single dose being 20 mg iron/kg actual body weight (or ideal body weight if very high/low BMI).

If the total iron dose exceeds 20 mg iron/kg body weight, the dose must be split in two administrations with an interval of at least one week.

Actual body weight should be taken during admission, prior to prescribing; signed and documented by the weighing party. Please also consider congested vs. dry weight when determining the dose for patients with concurrent fluid retention e.g. in heart failure.

Hb (g/L) (valid within 7 days of infusion)	Body weight (kg)		
	<50kg	≥50 to <70kg	≥70kg
<100	500mg	1500mg	2000mg
≥100	500mg	1000mg	1500mg

For more accurate dosing or for those at extremes of body weight, please use the Gazoni formula below:

Figure 1.

Iron needed (mg)	=	Body weight (kg) [use ideal body weight in obese patients]	x	15 – actual Hb (g/dL)	x	2.4	+	Iron for iron stores (mg) [Target usually 500mg or 10-15 mg/kg]

At discharge, please outline to the GP the administration of IV iron in the discharge letter and advise appropriate follow-up if necessary to prevent repeated treatment.

A patient may be suitable for discharge, prior to their second dose therefore in order to not delay discharge, please consider organising this second repeat infusion in SDEC/Daycase. In this instance, clearly indicate in discharge summary why oral therapy has been discontinued, and when to restart (if still indicated).

Example Dosing Table

Ferric derisomaltose 100 mg/ml doses for range of Haemoglobin (Hb) and body weight, incorporating 20mg/kg maximum dosing per week:

Weight	Hb <100g/L		Hb ≥100g/L	
<50kg	Ganzoni formula should be used to calculate dose - see Figure 1			
50 – 69kg	Week 1	1,000mg	Week 1	1,000mg
	Week 2	500mg	Week 2	-
70 – 74kg	Week 1	1,000mg	Week 1	1,000mg
	Week 2	1,000mg	Week 2	500mg
75 – 99kg	Week 1	1,500mg	Week1	1,500mg
	Week 2	500mg	Week 2	-
≥100kg	Week 1	2,000mg	Week 1	1,500mg

UHBW Drug Chart Example

Prescription								Prescriber		
Date	Time to be given	Infusion fluid	Infusion volume	Additive name & dose	Indication & other information	Infusion rate	Route and line	Sign	Print or stamp name	Bleep
		0.9% sodium chloride	100ml	Ferric derisomaltose 1500mg	IDA	30 mins	IV			

Infusion time

Dose	Infusion time
<500mg	15 minutes [Option to give via bolus injection (see below)]
<1000mg	15 minutes
>1000mg	30 minutes

See Medusa (via the Trust Intranet) for full administration guidance.

Infusion: Ferric derisomaltose should be added to 100ml sterile 0.9% sodium chloride.

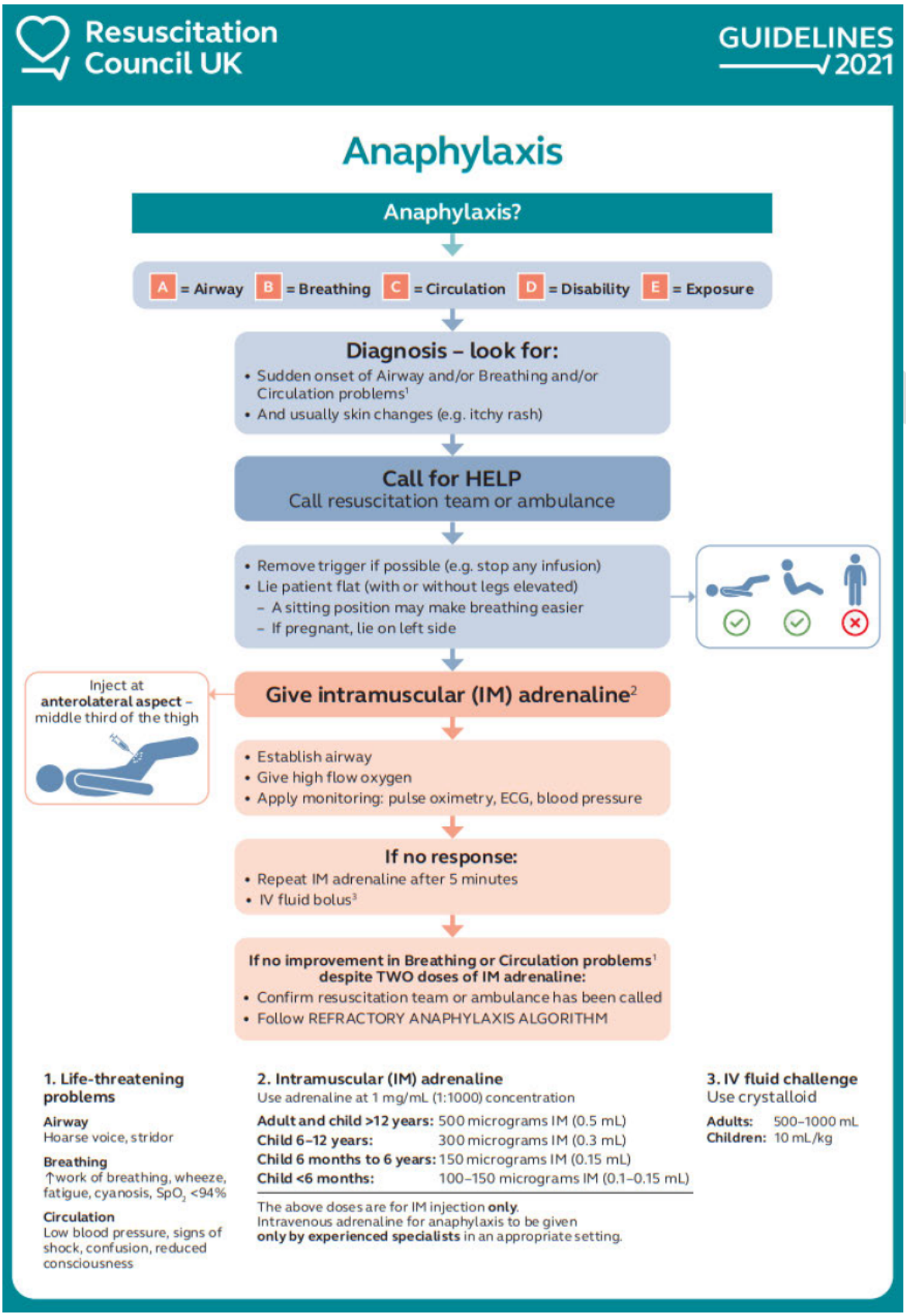
When the infusion has finished, use sterile 0.9% sodium chloride to flush the line, as per local policies. No other medications should be added to the infusion.

Injection: Ferric derisomaltose may be administered as an intravenous bolus injection for doses up to 500 mg (max. three times a week), at an administration rate of up to 250mg iron/minute.

It may be administered undiluted or diluted in maximum 20ml sterile 0.9% sodium chloride. (Please note, this should be within the weekly recommended dosing.)

Appendix 1

Algorithm for the management of immediate infusion reactions



Any suspected reactions to Ferric Derisomaltose should be reported via the Datix form, and documented clearly.

Table A

REFERENCES	Achebe, M. and DeLoughery, T.G. (2020). Clinical data for intravenous iron – debunking the hype around hypersensitivity. Transfusion, 60(6), pp.1154–1159. doi:https://doi.org/10.1111/trf.15837. [Appendix 1] eMC (2023). Ferric derisomaltose Pharmacosmos 100 mg/ml solution for injection/infusion - Summary of Product Characteristics (SmPC) - (emc). [online] www.medicines.org.uk. Available at: https://www.medicines.org.uk/emc/medicine/23669. Khan, A., Khan, W.M., Ayub, M., Humayun, M. and Haroon, M. (2016). Ferritin Is a Marker of Inflammation rather than Iron Deficiency in Overweight and Obese People. Journal of Obesity, [online] 2016, p.1937320. doi:https://doi.org/10.1155/2016/1937320. McFeely, M., Hill, K., Sargant, N. and Marriage, D. (2022). UHBW Clinical Guideline ANAPHYLAXIS IN ADULT AND CHILDREN. [online] UHBW. Available at: http://nww.avon.nhs.uk/dms/download.aspx?did=21908. Medusa (2023). Medusa NHS Injectable Medicines Guide - Ferric derisomaltose. [online] www.medusaimg.nhs.uk. Available at: https://www.medusaimg.nhs.uk/IVGuideDisplay.asp. Moretti, D., Goede, J.S., Zeder, C., Jiskra, M., Chatzinakou, V., Tjalsma, H., Melse-Boonstra, A., Brittenham, G., Swinkels, D.W. and Zimmermann, M.B. (2015). Oral iron supplements increase hepcidin and decrease iron absorption from daily or twice-daily doses in iron-depleted young women. Blood, [online] 126(17), pp.1981–1989. doi:https://doi.org/10.1182/blood-2015-05-642223. NICE (2021). CKS Anaemia - Iron deficiency. [online] NICE CKS. Available at: https://cks.nice.org.uk/topics/anaemia-iron-deficiency/. NICE (2023). BNF Ferric Derisomaltose. [online] NICE BNF. Available at: https://bnf.nice.org.uk/drugs/ferric-derisomaltose/. Thomas, D.W., Hinchliffe, R.F., Briggs, C., Macdougall, I.C., Littlewood, T. and Cavill, I. (2013). Guideline for the laboratory diagnosis of functional iron deficiency. British Journal of Haematology, 161(5), pp.639–648. doi:https://doi.org/10.1111/bjh.12311.
RELATED DOCUMENTS AND PAGES	Intravenous Iron (patient information leaflet) [redacted] Anaphylaxis in Adults and Children [redacted]
AUTHORISING BODY	Name of committee or group that authorised this document. THIS MUST BE COMPLETED IN ORDER FOR YOUR DOCUMENT TO BE ACCEPTED AND PLACED ON THE DMS.
SAFETY	Risk of anaphylaxis (rare adverse effect, ≥1/10000 to <1/1000)

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	Please be aware Ferric derisomaltose is not used at Bristol hospitals, only Weston.
QUERIES AND CONTACT	Weston General Hospital Inpatient Pharmacy, extension. [redacted]
AUDIT REQUIREMNTS	Not Applicable? (however can be audited if needed) Compliance can be audited, through reviewing patients who have received the medicine, obtaining an adequate sample size, and determining adherence to the guideline.

Plan Elements	**Plan Details**
The Dissemination Lead is:	Dissemination will be led by [redacted], and [redacted]
Is this document: A – replacing the same titled, expired guideline, B – replacing an alternative guideline, C – a new Guideline:	No
If answer above is B: Alternative documentation this guideline will replace (if applicable):	
This document is to be disseminated to:	UHBW Staff
Method of dissemination:	Shared with pharmacy staff at meeting.
Is training required and how will this be delivered:	Pharmacy teaching session organised by document authors.

Document Change Control

Date of Version	Version Number	Lead for Revisions	Type of Revision	Description of Revision
Mmm yy	0.00	(Job title only)	Major/ Minor	Include ALL changes completed in this revision, including title of section in the document.

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Sign off process

Once your document has been written, it should go to the relevant group for approval. This might include the Steering Group for the relevant speciality, or the Governance Group for the relevant division, especially if the document covers many different specialities/departments.

If you are unsure of who your document should be signed off by, please contact Clinical Guidelines [redacted] where the team can advise you.

Once your document has been signed off, include the name of the authorising group in **Table A** above and send the document to Clinical Guidelines [redacted] for uploading. Please note: this can take up to **two weeks** to be completed.

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