

SAFETY ALERT

Risk of permanent skin staining due to extravasation of intravenous iron infusions

ISSUE

Parenteral iron may be indicated for the treatment of iron deficiency when oral iron preparations are ineffective, unsuitable or there is a clinical need to replenish iron stores rapidly.¹ Permanent skin staining can occur if there is extravasation (leakage of fluid) into the surrounding tissues.^{1,2,8} An increase in reports of iron staining in recent years has been attributed to increased use of intravenous (IV) iron.² While skin staining can occur with intramuscular or IV iron , this safety alert focuses on IV administration.

EVIDENCE OF HARM

Staining has been reported with various iron products, and one study cited an incidence of 1.3%.⁴ It is usually light to dark brown in colour but it can also be black, bluish, purple or grey.⁵ In many cases, staining is permanent⁸ and may have psychological implications for the patient if it is cosmetically unacceptable.⁵

HOW TO REDUCE THE RISKS^{2,5,6}

- **1. Ensure appropriate and prudent use of IV iron.**² Hospitals may wish to consider whether it is feasible and beneficial to develop order and administration proformas and / or to restrict stocking of IV iron products to certain areas.
- 2. Local hospital IV administration guidelines should highlight the risk of skin staining and provide guidance on risk minimisation measures, monitoring during administration and managing extravasation.
- 3. Hospitals should consider implementing State Claims Agency advice to provide service users with comprehensive information to include the risks, benefits, and alternatives to IV iron infusion and obtain informed consent.² Educate patients to keep their arm still and straight during the infusion and to alert their nurse immediately to signs of the drug 'leaking'² e.g. pain, swelling, and feelings of pressure or pricking at the infusion site. Early cessation of the infusion may reduce the amount of solution that enters the tissues and could lessen the extent of staining.⁵ Note: some patients report no pain or other symptoms during the infusion and the discolouration appears hours or days later.⁶
- 4. Avoid giving IV iron when fewer staff members are available to monitor the infusion.² IV iron infusion is rarely urgent.²
- 5. Infusion site may influence extravasation risk due to potential for vessel damage related to cannula movement.⁵
 - In the event of multiple attempts at cannulation, consider postponing the administration of IV iron.⁶
 - Sites of non-flexion are recommended e.g. distal veins of

References:

¹Ferinject® Summary of Product Characteristic (SPC). Available from <u>https://www.hpra.ie/img/uploaded/swedocuments/Licence_PA0949-004-001_08062023091120.pdf</u>. Accessed 28.3.24

- ²King S. Iron staining and IV iron infusions. National Treasury Management Agency, State Claims Agency. 11.4.23 Available from: <u>https://stateclaims.ie/learning-events/iron-staining-and-iv-ironinfusions</u>. Accessed 6.2.24
- ³Pérez-Pevida B, Kamocka A. Haemosiderin pigmentation after intravenous iron infusion, BMJ 2018;360:k69. Available from: <u>https://www.bmj.com/content/360/bmj.k69</u>. Accessed 11.4.24

⁶Anker SD, Comin Colet J, Filippatos G, Willenheimer R, Dickstein K, Drexler H, et al. Ferric carboxymaltose in patients with heart failure and iron deficiency.; FAIR-HF Trial Investigators. N Engl J Med 2009;361:2436-48. Available from: <u>https://doi.org/10.1056/NEJMoa0908355</u>. Accessed 28.3.24



Figure 1. Image of skin staining with intravenous iron infusion³ Reproduced from Haemosiderin pigmentation after intravenous iron infusion, Pérez-Pevida B, Kamocka A, BMJ 2018;360:k69 with permission from BMJ Publishing Group. Ltd.

forearms. Avoid cannulation at sites of flexion.^{2,5,6}

- Use largest appropriate vein and smallest suitable cannula (20- to 24-gauge).⁷
- Secure the cannula and use an extension set to minimise catheter movement.^{2,5,6}
- Do not cover the IV site with a bandage which prevents visual inspection.^{2,5,6}
- Ensure the patency of the vein before administration with a sodium chloride 0.9% flush.^{2,5,6}
- Ensure the infusion duration is in accordance with the product information.⁶
- Monitor closely for signs and symptoms of extravasation.^{2,5,6}
- Flush cannula with sodium chloride 0.9% after administration.⁷
- 6. Manage extravasation promptly and appropriately^{5,6}
- Stop the infusion immediately
- Disconnect the giving set
- Aspirate any residual drug from the cannula
- Remove cannula
- Apply a cold compress to treat swelling or soreness (not shown to prevent spread of stain)
- Ideally, clinical photographs should be taken to record the extent and facilitate monitoring
- Develop an appropriate follow up plan
- Consider referral to Dermatology or Plastics- laser therapy may be a treatment option
- Report in line with local reporting policies.
- ⁵Canning M, Grannell L. A stain on iron therapy. Australian Prescriber 2020; 43(5). Available from <u>https://australianprescriber.tg.org.au/articles/a-stain-on-iron-therapy.html</u>. Accessed 26.9.24

⁶Intravenous iron preparations and potential for skin staining. Australian New South Wales Safety Information 006/23. Issued 29/3/23. Available from: <u>https://www.health.nsw.gov.au/sabs/</u> <u>Documents/2023-si-006.pdf</u>. Accessed: 28.3.24

⁷SJH Med Safety Minute. IV iron can result in an adverse effect which may have permanent cosmetic consequences for a patient. Available from: <u>https://drive.google.com/file/d/1kOA-fKoJ0tzTK134Utt11k6xHR00pA31/view</u>. Accessed 26.9.24

⁸Preventing Extravasation / Tissue Infiltration Injury. HSE Patient Safety Supplement 03/2024. Issued 26/09/24. Available from: <u>https://assets.hse.ie/media/documents/PSS- Preventing</u> <u>ExtravasationTissue Infiltration Injury.pdf</u> Accessed: 08.10.24

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