

## St George Hospital Renal Department: INTERNAL ONLY

### Evidence to support low dose maintenance IV Iron Supplementation:

- Most common factors associated with ESA hyporesponsiveness are iron deficiency, frequent hospitalization for infection, catheter use, hypoalbuminemia and elevated CRP levels (9)
- Assessment of IV iron to replete iron stores prior to ESA usage should be undertaken (5)
- IV iron therapy, when added to ESA therapy, offers additional clinical benefits, such as a reduction in the EPO dosing requirements needed to maintain improved Hb and hematocrit levels (4, 8, 9, 10)
- Losses of iron in haemodialysis patients can be up to 6 mg per day, exceeding the absorption capacity of the gastrointestinal tract (3)
- ESA use will increase the body's demand for iron and although sufficient iron stores exist, the iron cannot be delivered to the bone marrow fast enough to meet the increased iron demands (9)
- Inflammatory states increase the circulating level of 'hepcidin', an acute-phase hormone produced by the liver, which can block iron absorption from the gut and restrict the release of iron in storage – also known as inflammation-mediated reticulo-endothelial (RE) blockade (9)
- The administration of IV iron therapy (eg a 1 g repletion course) can mobilize iron, help overcome iron-restricted erythropoiesis/inflammation-mediated RE blockade and improve Hb levels (highlighted by improved levels of the iron marker reticulocyte Hb content [CHr]) – DRIVE Study (2007) (9)
- IV iron use in a patient with an active infection can facilitate microbial growth (9)
- DRIVE-II Study (2008) demonstrated a significant reduction in ESA dosing while maintaining a Hb level greater than 11 g/dL with the administration of IV iron (9)
- Regular, low dose IV iron can improve and stabilize Hb levels, preventing a "roller-coaster" effect which can result from a repletion course (9, 10)

## References:

1. McMahon L. Haemoglobin. *Nephrology*. 2008; 13:s44-s47
2. CARI: Caring for australians with renal impairment: Guideline summary; 2009 [cited 2010 July 14]. Available from: [http://www.cari.org.au/DIALYSIS\\_bht\\_published/Iron.pdf](http://www.cari.org.au/DIALYSIS_bht_published/Iron.pdf)
3. Macdougall I, Eckardt K. Chapter 72: Anaemia in chronic kidney disease. In Feehally J, Floege J, Johnson R J. *Comprehensive clinical nephrology*. 3<sup>rd</sup> ed. Philadelphia: Mosby, 2007. p. 853-860
4. Singh A K, Hertello P. The benefits of IV iron therapy in treating anemia in patients with renal disease and comorbid cardiovascular disease. *Nephrol Nurs J*. 2005; 32(2):199-206
5. Goldsmith D, Covic A. Time to reconsider evidence for anaemia treatment (TREAT) = Essential safety arguments (ESA). *Nephrol Dial Transplant*. 2010; 25:1734-1737
6. FDA Information for Healthcare Professionals: Erythropoiesis Stimulating Agents (ESA): FDA ALERT [11/16/2006, Updated 2/16/2007 and 3/09/2007]. Available: <http://www.fda.gov.au>
7. Unger E F, Thompson A M, Blank M J, Temple R. Erythropoiesis-stimulating agents – Time for a reevaluation; 2010 [cited 2010 January 1]. Available from: [www.nejm.org](http://www.nejm.org)
8. Anker S D, Toto R. Future perspectives on treatment with erythropoiesis-stimulating agents in high-risk patients. *NDT Plus*. 2009; 2(Suppl 1):i3-i8
9. Eason A. Correcting iron-restricted erythropoiesis and improving anemia in patients on hemodialysis: practical tips that can make a difference. *Nephrol Nurs J*. 2009; 36(5):529-534
10. De Francisco A L M, Stenvinkel P, Vaulont S. Inflammation and its impact on anaemia in chronic kidney disease: from haemoglobin variability to hyporesponsiveness. *NDT Plus*. 2009; 2(Suppl 1):i18-i26
11. Burrows LaV, Muller R. Chronic kidney disease and cardiovascular disease: pathophysiologic links. *Nephrol Nurs J*. 2007; 34(1):55-63
12. Daugirdas J T, Blake P G, Ing T S. *Handbook of dialysis*. 3<sup>rd</sup> ed. Philadelphia: Lippincott Williams & Wilkins; 2001. p. 159-162, 477-489
13. KDOQI (Kidney Disease Outcomes Quality Initiative). Clinical practice recommendation for anaemia in chronic kidney disease in adults. 2006 [cited 2009 September 15]. Available from: <file:///F:/Anaemia%20identifying%20patients.htm>
14. Enders H M. Evaluating iron status in hemodialysis patients. *Nephrol Nurs J*. 2002; 29(4):366–369
15. Strippoli G F M, Navaneethan S D, Craig J C, Palmer S C. Haemoglobin and haematocrit targets for the anaemia of chronic kidney disease. *Cochrane database of systematic reviews*. 2006, Issue 4 [cited 2010 May 5]. Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles>

16. Hayat A, Haria D, Salifu M. Erythropoietin stimulating agents in the management of anemia of chronic kidney disease. *Patient Prefer Adherence*. 2008; 2:195-200
17. Locatelli F, Covic A, Eckardt E-U, Wiecek A, Vanholder R. Anaemia management in patients in chronic kidney disease: a position statement by the Anaemia Working Group of European Renal Best Practice (ERBP). *Nephrol Dial Transplant*. 2009; 24:348-354