

## UNDERSTANDING YOUR IRON LEVELS

### HOW IS IRON DEFICIENCY DIAGNOSED?

The diagnosis of iron deficiency and iron deficiency anaemia will be based on your medical history, physical examination as well as the results of a number of different blood tests.<sup>1</sup> In some cases, it is only discovered when your doctor performs a routine screening test or while checking for other problems.<sup>1,2</sup>

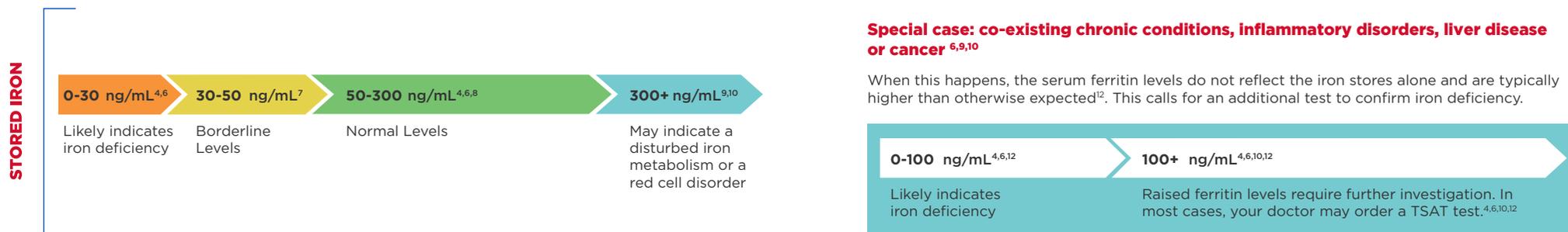
The blood work will evaluate both red blood cells and iron levels.<sup>1,2</sup> The interpretation of the results will depend on the individual clinical situation and the laboratory reference values.<sup>2,3</sup>

One of the key values is serum ferritin, that represents how much iron is stored in your body. Low serum ferritin levels may indicate iron deficiency. Raised levels of serum ferritin may require further investigation as certain medical conditions may interfere with the readings. Due to this, your doctor might ask to also check the transferrin saturation (TSAT), that represents the body's ability to transport the iron from the stores to the bone marrow, where red cells are made.<sup>6,9,10</sup>

### IRON DEFICIENCY REFERENCE VALUES\*

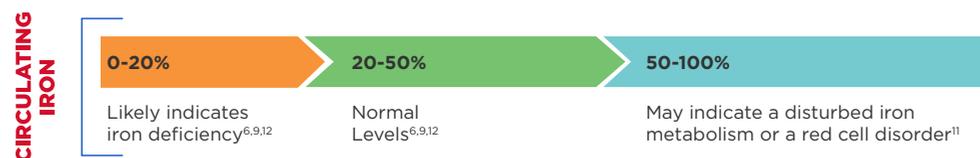
**Serum Ferritin:** it is a measure of the storage form of iron.

Ferritin is a protein that stores iron in the cells of your body.<sup>5</sup> A small amount of ferritin can be found in the blood and can be measured to see if you are iron deficient.<sup>1</sup>



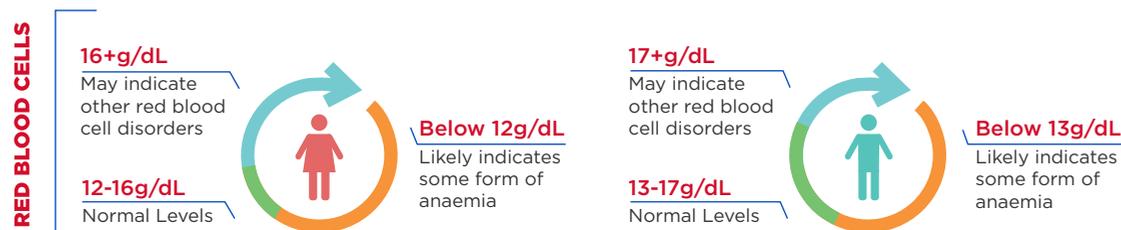
**Transferrin saturation (TSAT):** is a measure of the circulating form of iron.

TSAT indicates how much iron is attached to the transferrin and available for production of haemoglobin in the red cells or other physiological processes.<sup>11</sup>



### ANAEMIA REFERENCE VALUES\*\*

**Haemoglobin:** main component of red blood cells, which uses iron to transport oxygen to the cells. Haemoglobin concentration alone cannot be used to diagnose iron deficiency.<sup>8</sup>



\*for adult patients

\*\*Non pregnant women and men above 15 years of age<sup>8</sup>



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**1.** How is Iron Deficiency Anemia Diagnosed. Available at <https://www.nhlbi.nih.gov/health/health-topics/topics/ida/diagnosis>. Last accessed: 22. February. 2017 **2.** Auerbach M and Adamson JW How We Diagnose and Treat Iron Deficiency Anemia. *Am J Hematol* 91, no.1 (Jan 2016): 31-8. **3.** Wish JB. Assessing Iron Status: Beyond Serum Ferritin and Transferrin Saturation *CJASN* September 2006 vol. 1 no. Supplement 1 S4-S8 **4.** Muñoz M, García-Erce JA, Remacha AF Disorders of iron metabolism. Part 1: molecular basis of iron homeostasis. *J Clin Pathol.* 2011 Apr;64(4):281-6. doi: 10.1136/jcp.2010.079046. Epub 2010 Dec 20. **5.** Knovich MA, Storey JA, Coffman LG, and Torti SV *Blood Rev.* 2009 May; 23(3): 95-104. **6.** Muñoz et al International Consensus Statement on the Peri-Operative Management of Anaemia and Iron Deficiency. *Anaesthesia* 72, no. 2 (Feb 2017): 233-47. **7.** Favrat, B., et al. (2014). Evaluation of a single dose of ferric carboxymaltose in fatigued, iron-deficient women--PREFER a randomized, placebo-controlled study. *PLoS One* 9(4): e94217. **8.** WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. *Vitamin and Mineral Nutrition Information System.* Geneva, World Health Organization, 2011 (WHO/NMH/NHD/MNM/11.1). Available at <http://www.who.int/vmnis/indicators/haemoglobin.pdf>, last accessed 22. February. 2017. **9.** Muñoz M, García-Erce JA, Remacha AF. Disorders of Iron Metabolism. Part II: Iron Deficiency and Iron Overload. *Journal of clinical pathology* 64, no. 4 (Apr 2011): 287-96. <http://dx.doi.org/10.1136/jcp.2010.086991>. **10.** Koperdanova M, Cullis JO. Interpreting raised serum ferritin levels. *BMJ.* 2015 Aug 3;351:h3692. doi: 10.1136/bmj.h3692. **11.** Elsayed M, Sharif MU, Stack AG. Transferrin Saturation: A Body Iron Biomarker. *Adv Clin Chem.* 2016;75:71-97. doi: 10.1016/bs.acc.2016.03.002 **12.** Cappellini MD et al Iron deficiency across chronic inflammatory conditions: International expert opinion on definition, diagnosis, and management. *Am J Hematol.* 2017 Jun 13. doi: 10.1002/ajh.24820. [Epub ahead of print]

Last updated: 22. February. 2017