

If a conflict arises between a Clinical Payment and Coding Policy and any plan document under which a member is entitled to Covered Services, the plan document will govern. If a conflict arises between a CPCP and any provider contract pursuant to which a provider participates in and/or provides Covered Services to eligible member(s) and/or plans, the provider contract will govern. "Plan documents" include, but are not limited to, Certificates of Health Care Benefits, benefit booklets, Summary Plan Descriptions, and other coverage documents. Blue Cross and Blue Shield of Oklahoma may use reasonable discretion interpreting and applying this policy to services being delivered in a particular case. BCBSOK has full and final discretionary authority for their interpretation and application to the extent provided under any applicable plan documents.

Providers are responsible for submission of accurate documentation of services performed. Providers are expected to submit claims for services rendered using valid code combinations from Health Insurance Portability and Accountability Act approved code sets. Claims should be coded appropriately according to industry standard coding guidelines including, but not limited to: Uniform Billing Editor, American Medical Association, Current Procedural Terminology, CPT® Assistant, Healthcare Common Procedure Coding System, ICD-10 CM and PCS, National Drug Codes, Diagnosis Related Group guidelines, Centers for Medicare and Medicaid Services National Correct Coding Initiative Policy Manual, CCI table edits and other CMS guidelines.

Claims are subject to the code edit protocols for services/procedures billed. Claim submissions are subject to claim review including but not limited to, any terms of benefit coverage, provider contract language, medical policies, clinical payment and coding policies as well as coding software logic. Upon request, the provider is urged to submit any additional documentation.

Diagnostic Testing of Iron Homeostasis and Metabolism

Policy Number: CPCPLAB008

Version 1.0

Approval Date: Jan. 12, 2026

Plan Effective Date: May 1, 2026

Description

The Plan has implemented certain lab management reimbursement criteria. Not all requirements apply to each product. Providers are urged to review Plan documents for eligible coverage for services rendered.

Reimbursement Information:

1. Measurement of serum ferritin levels (no more than one test per month unless otherwise specified) **may be reimbursable in any** of the following situations:
 - a. For individuals with anemia.
 - b. Once every three weeks for individuals with an iron overload disorder.
 - c. For individuals with symptoms of hemochromatosis (See **Note 1**).
 - d. For individuals with first-degree relatives (See **Note 2**) with confirmed hereditary hemochromatosis (HH)
 - e. For the evaluation of individuals with liver disease.
 - f. For the evaluation of hemophagocytic lymphohistiocytosis (HLH) and Still Disease
 - g. In males with secondary hypogonadism
 - h. For individuals with chronic kidney disease:
 - i. One test every three months if the individual is not receiving dialysis.
 - ii. One test every month if the individual is receiving dialysis.
 - i. For individuals on iron therapy.
 - j. For individuals with restless legs syndrome or periodic limb movement disorder.
2. Measurement of serum transferrin saturation **may be reimbursable in any** the following:
 - a. For the evaluation of iron overload in individuals with symptoms of hemochromatosis (See **Note 1**).
 - b. For the evaluation of iron overload in individuals with first-degree relatives (See **Note 2**) with confirmed hereditary hemochromatosis (HH).
 - c. For the evaluation of iron deficiency anemia.
 - d. For individuals with restless legs syndrome or periodic limb movement disorder.
3. For all other situations not addressed above, measurement of ferritin or transferrin levels, including transferrin saturation, **is not reimbursable**.
4. Serum hepcidin testing, including immunoassays, **is not reimbursable**.
5. The use of GlycA testing to measure or monitor transferrin or other glycosylated proteins **is not reimbursable**.

Please note that carbohydrate-deficient transferrin is out of the scope for this policy.

NOTE 1: Symptoms of hemochromatosis (iron overload) (6):

- Fatigue
- Arrhythmias
- Joint pain
- Low libido or erectile dysfunction
- Pain in the knuckles of the index and middle fingers (sometimes called “iron fist”)
- Skin darkening (a gray or bronze tint)
- Unexplained weight loss
- Upper abdominal pain

NOTE 2: First-degree relatives include parents, full siblings, and children of the individual.

Procedure Codes

The following is not an all-encompassing code list. The inclusion of a code does not guarantee that it is a covered service or eligible for reimbursement.

Codes
82728, 83540, 83550, 84466, 84999, 0024U, 0251U

References:

1. Knutson MD. Iron transport proteins: Gateways of cellular and systemic iron homeostasis. *The Journal of biological chemistry*. Aug 4 2017;292(31):12735-12743. doi:10.1074/jbc.R117.786632
2. Byrne SL, Krishnamurthy D, Wessling-Resnick M. Pharmacology of iron transport. *Annual review of pharmacology and toxicology*. 2013;53:17-36. doi:10.1146/annurev-pharmtox-010611-134648
3. Camaschella C, Weiss G. Regulation of iron balance. Updated October 24, 2025. <https://www.uptodate.com/contents/regulation-of-iron-balance>
4. Roetto A, Mezzanotte M, Pellegrino RM. The Functional Versatility of Transferrin Receptor 2 and Its Therapeutic Value. *Pharmaceuticals (Basel, Switzerland)*. Oct 23 2018;11(4)doi:10.3390/ph11040115
5. Pietrangelo A. Genetics, Genetic Testing, and Management of Hemochromatosis: 15 Years Since Hepcidin. *Gastroenterology*. Oct 2015;149(5):1240-1251.e4. doi:10.1053/j.gastro.2015.06.045
6. Cleveland Clinic. Hemochromatosis (Iron Overload). Updated August 12, 2025. <https://my.clevelandclinic.org/health/diseases/14971-hemochromatosis-iron-overload>
7. Hentze MW, Muckenthaler MU, Andrews NC. Balancing acts: molecular control of mammalian iron metabolism. *Cell*. Apr 30 2004;117(3):285-97. doi:10.1016/S0092-8674(04)00343-5

8. Zhang DL, Ghosh MC, Rouault TA. The physiological functions of iron regulatory proteins in iron homeostasis - an update. *Front Pharmacol.* 2014;5doi:10.3389/fphar.2014.00124
9. Hentze MW, Muckenthaler MU, Galy B, Camaschella C. Two to tango: regulation of Mammalian iron metabolism. *Cell.* Jul 9 2010;142(1):24-38. doi:10.1016/j.cell.2010.06.028
10. Finazzi D, Arosio P. Biology of ferritin in mammals: an update on iron storage, oxidative damage and neurodegeneration. *Arch Toxicol.* Oct 2014;88(10):1787-802. doi:10.1007/s00204-014-1329-0
11. Ganz T. Systemic iron homeostasis. *Physiol Rev.* Oct 2013;93(4):1721-41. doi:10.1152/physrev.00008.2013
12. Vujić M. Molecular basis of HFE-hemochromatosis. *Front Pharmacol.* 2014;5doi:10.3389/fphar.2014.00042
13. Liu X, Theil EC. Ferritins: dynamic management of biological iron and oxygen chemistry. *Acc Chem Res.* Mar 2005;38(3):167-75. doi:10.1021/ar0302336
14. Arosio P, Levi S. Cytosolic and mitochondrial ferritins in the regulation of cellular iron homeostasis and oxidative damage. *Biochimica et biophysica acta.* Aug 2010;1800(8):783-92. doi:10.1016/j.bbagen.2010.02.005
15. Bresgen N, Eckl PM. Oxidative stress and the homeodynamics of iron metabolism. *Biomolecules.* May 11 2015;5(2):808-47. doi:10.3390/biom5020808
16. Anderson CP, Shen M, Eisenstein RS, Leibold EA. Mammalian iron metabolism and its control by iron regulatory proteins. *Biochimica et biophysica acta.* Sep 2012;1823(9):1468-83. doi:10.1016/j.bbamcr.2012.05.010
17. Campanella A, Rovelli E, Santambrogio P, Cozzi A, Taroni F, Levi S. Mitochondrial ferritin limits oxidative damage regulating mitochondrial iron availability: hypothesis for a protective role in Friedreich ataxia. *Hum Mol Genet.* Jan 1 2009;18(1):1-11. doi:10.1093/hmg/ddn308
18. Paul BT, Manz DH, Torti FM, Torti SV. Mitochondria and Iron: current questions. *Expert Rev Hematol.* Jan 2017;10(1):65-79. doi:10.1080/17474086.2016.1268047
19. Mancias JD, Wang X, Gygi SP, Harper JW, Kimmelman AC. Quantitative proteomics identifies NCOA4 as the cargo receptor mediating ferritinophagy. *Nature.* May 1 2014;509(7498):105-9. doi:10.1038/nature13148
20. La A, Nguyen T, Tran K, et al. Mobilization of iron from ferritin: new steps and details. *Metallomics.* Jan 24 2018;10(1):154-168. doi:10.1039/c7mt00284j
21. Kruszewski M. Labile iron pool: the main determinant of cellular response to oxidative stress. *Mutat Res.* Oct 29 2003;531(1-2):81-92. doi:10.1016/j.mrfmmm.2003.08.004
22. Cabantchik ZI. Labile iron in cells and body fluids: physiology, pathology, and pharmacology. *Front Pharmacol.* 2014;5:45. doi:10.3389/fphar.2014.00045
23. Hou W, Xie Y, Song X, et al. Autophagy promotes ferroptosis by degradation of ferritin. *Autophagy.* Aug 2 2016;12(8):1425-8. doi:10.1080/15548627.2016.1187366
24. Xie Y, Hou W, Song X, et al. Ferroptosis: process and function. *Cell Death Differ.* 2016;23(3):369-79. doi:10.1038/cdd.2015.158
25. Lv Q, Niu H, Yue L, et al. Abnormal Ferroptosis in Myelodysplastic Syndrome. *Front Oncol.* 2020;10:1656. doi:10.3389/fonc.2020.01656

26. Cohen LA, Gutierrez L, Weiss A, et al. Serum ferritin is derived primarily from macrophages through a nonclassical secretory pathway. *Blood*. Sep 2 2010;116(9):1574-84. doi:10.1182/blood-2009-11-253815
27. Alfrey CP. Serum ferritin assay. *CRC Crit Rev Clin Lab Sci*. 1978;9(3):179-208. doi:10.3109/10408367809150919
28. Kell DB, Pretorius E. Serum ferritin is an important inflammatory disease marker, as it is mainly a leakage product from damaged cells. *Metallomics*. Apr 2014;6(4):748-73. doi:10.1039/c3mt00347g
29. Wang W, Knovich MA, Coffman LG, Torti FM, Torti SV. Serum ferritin: Past, present and future. *Biochimica et biophysica acta*. Aug 2010;1800(8):760-9. doi:10.1016/j.bbagen.2010.03.011
30. Santambrogio P, Cozzi A, Levi S, Arosio P. Human serum ferritin G-peptide is recognized by anti-L ferritin subunit antibodies and concanavalin-A. *Br J Haematol*. Feb 1987;65(2):235-7. doi:10.1111/j.1365-2141.1987.tb02271.x
31. Koperdanova M, Cullis JO. Interpreting raised serum ferritin levels. *BMJ*. Aug 3 2015;351:h3692. doi:10.1136/bmj.h3692
32. Zanella A, Gridelli L, Berzuini A, et al. Sensitivity and predictive value of serum ferritin and free erythrocyte protoporphyrin for iron deficiency. *J Lab Clin Med*. 1989;113(1):73-8. <https://www.ncbi.nlm.nih.gov/pubmed/2909654>
33. Finch CA, Bellotti V, Stray S, et al. Plasma ferritin determination as a diagnostic tool. *West J Med*. 1986;145(5):657-63. PMC1307110, <https://www.ncbi.nlm.nih.gov/pubmed/3541387>
34. Jacobs A, Miller F, Worwood M, Beamish MR, Wardrop CA. Ferritin in the serum of normal subjects and patients with iron deficiency and iron overload. *Br Med J*. Oct 28 1972;4(5834):206-8. doi:10.1136/bmj.4.5834.206
35. Costa Matos L, Batista P, Monteiro N, et al. Iron stores assessment in alcoholic liver disease. *Scand J Gastroenterol*. Jun 2013;48(6):712-8. doi:10.3109/00365521.2013.781217
36. Enko D, Wagner H, Kriegshauser G, Kimbacher C, Stolba R, Halwachs-Baumann G. Assessment of human iron status: A cross-sectional study comparing the clinical utility of different laboratory biomarkers and definitions of iron deficiency in daily practice. *Clin Biochem*. Sep 2015;48(13-14):891-6. doi:10.1016/j.clinbiochem.2015.05.008
37. Peng YY, Uprichard J. Ferritin and iron studies in anaemia and chronic disease. *Ann Clin Biochem*. Jan 2017;54(1):43-48. doi:10.1177/0004563216675185
38. Dignass A, Farrag K, Stein J. Limitations of Serum Ferritin in Diagnosing Iron Deficiency in Inflammatory Conditions. *Int J Chronic Dis*. 2018;2018:9394060. doi:10.1155/2018/9394060
39. Suchdev PS, Williams AM, Mei Z, et al. Assessment of iron status in settings of inflammation: challenges and potential approaches. *Am J Clin Nutr*. Dec 2017;106(Suppl 6):1626s-1633s. doi:10.3945/ajcn.117.155937
40. Knovich MA, Storey JA, Coffman LG, Torti SV, Torti FM. Ferritin for the clinician. *Blood Rev*. May 2009;23(3):95-104. doi:10.1016/j.blre.2008.08.001
41. Muñoz M, Gomez-Ramirez S, Besser M, et al. Current misconceptions in diagnosis and management of iron deficiency. *Blood Transfus*. Sep 2017;15(5):422-437. doi:10.2450/2017.0113-17
42. Ahmad S, Moriconi F, Naz N, et al. Ferritin L and Ferritin H are differentially located within hepatic and extra hepatic organs under physiological and acute

- phase conditions. *Int J Clin Exp Pathol*. 2013;6(4):622-9. PMC3606851, <https://pubmed.ncbi.nlm.nih.gov/23573308/>
43. Evensen KJ, Swaak TJ, Nossent JC. Increased ferritin response in adult Still's disease: specificity and relationship to outcome. *Scand J Rheumatol*. Mar-Apr 2007;36(2):107-10. doi:10.1080/03009740600958504
 44. Zandman-Goddard G, Shoenfeld Y. Ferritin in autoimmune diseases. *Autoimmun Rev*. Aug 2007;6(7):457-63. doi:10.1016/j.autrev.2007.01.016
 45. Emmenegger U, Frey U, Reimers A, et al. Hyperferritinemia as indicator for intravenous immunoglobulin treatment in reactive macrophage activation syndromes. *Am J Hematol*. Sep 2001;68(1):4-10. doi:10.1002/ajh.1141
 46. Sekigawa I, Suzuki J, Nawata M, et al. Hemophagocytosis in autoimmune disease. *Clin Exp Rheumatol*. 2001;19(3):333-8. <https://www.ncbi.nlm.nih.gov/pubmed/11407091>
 47. Ueda N, Takasawa K. Impact of Inflammation on Ferritin, Hepcidin and the Management of Iron Deficiency Anemia in Chronic Kidney Disease. *Nutrients*. Aug 27 2018;10(9)doi:10.3390/nu10091173
 48. Ganz T, Nemeth E. Iron sequestration and anemia of inflammation. *Seminars in hematology*. Oct 2009;46(4):387-93. doi:10.1053/j.seminhematol.2009.06.001
 49. Kroot JJ, Tjalsma H, Fleming RE, Swinkels DW. Hepcidin in human iron disorders: diagnostic implications. *Clin Chem*. Dec 2011;57(12):1650-69. doi:10.1373/clinchem.2009.140053
 50. Santos PC, Krieger JE, Pereira AC. Molecular diagnostic and pathogenesis of hereditary hemochromatosis. *Int J Mol Sci*. 2012;13(2):1497-511. doi:10.3390/ijms13021497
 51. Lehn A, Boyle R, Brown H, Airey C, Mellick G. Neuroferritinopathy. *Parkinsonism & Related Disorders*. 2012;doi:10.1016/j.parkreldis.2012.06.021
 52. Kumar N, Rizek P, Jog M. Neuroferritinopathy: Pathophysiology, Presentation, Differential Diagnoses and Management. *Tremor and other hyperkinetic movements (New York, NY)*. 2016;6:355. doi:10.7916/D8KK9BHF
 53. Keogh MJ, Morris CM, Chinnery PF. Neuroferritinopathy. *Int Rev Neurobiol*. 2013;110:91-123. doi:10.1016/b978-0-12-410502-7.00006-5
 54. McNally JR, Mehlenbacher MR, Lusciati S, et al. Mutant L-chain ferritins that cause neuroferritinopathy alter ferritin functionality and iron permeability. *Metallomics*. Oct 16 2019;11(10):1635-1647. doi:10.1039/c9mt00154a
 55. Kuwata T, Okada Y, Yamamoto T, et al. Structure, Function, Folding, and Aggregation of a Neuroferritinopathy-Related Ferritin Variant. *Biochemistry*. May 7 2019;58(18):2318-2325. doi:10.1021/acs.biochem.8b01068
 56. Hayflick SJ, Kurian MA, Hogarth P. Neurodegeneration with brain iron accumulation. *Handbook of clinical neurology*. 2018;147:293-305. doi:10.1016/b978-0-444-63233-3.00019-1
 57. Arber CE, Li A, Houlden H, Wray S. Review: Insights into molecular mechanisms of disease in neurodegeneration with brain iron accumulation: unifying theories. *Neuropathology and applied neurobiology*. Apr 2016;42(3):220-41. doi:10.1111/nan.12242
 58. Kwiatkowski JL. Approach to the patient with suspected iron overload. Updated October 20, 2025. <https://www.uptodate.com/contents/approach-to-the-patient-with-suspected-iron-overload>

59. Camaschella C. Iron-Deficiency Anemia. *N Engl J Med*. Jul 30 2015;373(5):485-6. doi:10.1056/NEJMc1507104
60. Miller JL. Iron deficiency anemia: a common and curable disease. *Cold Spring Harb Perspect Med*. Jul 1 2013;3(7)doi:10.1101/cshperspect.a011866
61. Sankaran VG, Weiss MJ. Anemia: progress in molecular mechanisms and therapies. *Nat Med*. Mar 2015;21(3):221-30. doi:10.1038/nm.3814
62. Kassebaum NJ, Jasrasaria R, Naghavi M, et al. A systematic analysis of global anemia burden from 1990 to 2010. *Blood*. Jan 30 2014;123(5):615-24. doi:10.1182/blood-2013-06-508325
63. DeLoughery TG. Iron Deficiency Anemia. *Med Clin North Am*. Mar 2017;101(2):319-332. doi:10.1016/j.mcna.2016.09.004
64. Ozdemir N. Iron deficiency anemia from diagnosis to treatment in children. *Turk Pediatri Ars*. Mar 2015;50(1):11-9. doi:10.5152/tpa.2015.2337
65. Lewkowicz AK, Tuuli MG. Iron-deficiency anaemia in pregnancy: the role of hepcidin. *Lancet Glob Health*. Nov 2019;7(11):e1476-e1477. doi:10.1016/s2214-109x(19)30414-0
66. Marell PS, Blohowiak SE, Evans MD, Georgieff MK, Kling PJ, Tran PV. Cord Blood-Derived Exosomal CNTN2 and BDNF: Potential Molecular Markers for Brain Health of Neonates at Risk for Iron Deficiency. *Nutrients*. Oct 16 2019;11(10)doi:10.3390/nu11102478
67. Wieggersma AM, Dalman C, Lee BK, Karlsson H, Gardner RM. Association of Prenatal Maternal Anemia With Neurodevelopmental Disorders. *JAMA Psychiatry*. Sep 18 2019;76(12):1-12. doi:10.1001/jamapsychiatry.2019.2309
68. Ritchie SC, Wurtz P, Nath AP, et al. The Biomarker GlycA Is Associated with Chronic Inflammation and Predicts Long-Term Risk of Severe Infection. *Cell Syst*. Oct 28 2015;1(4):293-301. doi:10.1016/j.cels.2015.09.007
69. Otvos JD, Shalaurova I, Wolak-Dinsmore J, et al. GlycA: A Composite Nuclear Magnetic Resonance Biomarker of Systemic Inflammation. *Clin Chem*. May 2015;61(5):714-23. doi:10.1373/clinchem.2014.232918
70. Dahlfors G, Stal P, Hansson EC, et al. Validation of a competitive ELISA assay for the quantification of human serum hepcidin. *Scandinavian journal of clinical and laboratory investigation*. 2015;75(8):652-8. <https://pubmed.ncbi.nlm.nih.gov/26264426/>
71. Karlsson T. Evaluation of a competitive hepcidin ELISA assay in the differential diagnosis of iron deficiency anaemia with concurrent inflammation and anaemia of inflammation in elderly patients. *Journal of inflammation (London, England)*. 2017;14:21. doi:10.1186/s12950-017-0166-3
72. Chen M, Liu J, Wright B. A sensitive and cost-effective HPLC/MS/MS (MRM) method for the clinical measurement of serum hepcidin. *Rapid Commun Mass Spectrom*. Oct 31 2019;doi:10.1002/rcm.8644
73. da Silva WR, Silveira L, Jr., Fernandes AB. Diagnosing sickle cell disease and iron deficiency anemia in human blood by Raman spectroscopy. *Lasers Med Sci*. Oct 22 2019;doi:10.1007/s10103-019-02887-1
74. Gerday E, Brereton JB, Bahr TM, et al. Urinary ferritin; a potential noninvasive way to screen NICU patients for iron deficiency. *J Perinatol*. Jul 24 2020;doi:10.1038/s41372-020-0746-6

75. Jones KS, Meadows SR, Chamberlain K, et al. Delayed Processing of Chilled Whole Blood for 24 Hours Does Not Affect the Concentration of the Majority of Micronutrient Status Biomarkers. *J Nutr.* Jul 24 2021;doi:10.1093/jn/nxab267
76. Bell S, Rigas AS, Magnusson MK, et al. A genome-wide meta-analysis yields 46 new loci associating with biomarkers of iron homeostasis. *Commun Biol.* Feb 3 2021;4(1):156. doi:10.1038/s42003-020-01575-z
77. Gozzelino R, Arosio P. Iron Homeostasis in Health and Disease. *Int J Mol Sci.* Jan 20 2016;17(1)doi:10.3390/ijms17010130
78. Fleming RE, Ponka P. Iron overload in human disease. *N Engl J Med.* Jan 26 2012;366(4):348-59. doi:10.1056/NEJMra1004967
79. McLaren CE, Barton JC, Adams PC, et al. Hemochromatosis and Iron Overload Screening (HEIRS) study design for an evaluation of 100,000 primary care-based adults. *Am J Med Sci.* Feb 2003;325(2):53-62. doi:10.1097/00000441-200302000-00001
80. Salgia RJ, Brown K. Diagnosis and management of hereditary hemochromatosis. *Clin Liver Dis.* Feb 2015;19(1):187-98. doi:10.1016/j.cld.2014.09.011
81. van Bokhoven MA, van Deursen CT, Swinkels DW. Diagnosis and management of hereditary haemochromatosis. *BMJ.* Jan 19 2011;342:c7251. doi:10.1136/bmj.c7251
82. Saeed H, Woods RR, Lester J, Herzig R, Gul Z, Monohan G. Evaluating the optimal serum ferritin level to identify hemophagocytic lymphohistiocytosis in the critical care setting. *Int J Hematol.* Aug 2015;102(2):195-9. doi:10.1007/s12185-015-1813-1
83. Abioye AI, Aboud S, Premji Z, et al. Hemoglobin and hepcidin have good validity and utility for diagnosing iron deficiency anemia among pregnant women. *Eur J Clin Nutr.* Oct 17 2019;doi:10.1038/s41430-019-0512-z
84. Ismail NA, Habib SA, Talaat AA, Mostafa NO, Elghoroury EA. The Relation between Serum Hepcidin, Ferritin, Hepcidin: Ferritin Ratio, Hydroxyurea and Splenectomy in Children with beta-Thalassemia. *Open Access Maced J Med Sci.* Aug 15 2019;7(15):2434-2439. doi:10.3889/oamjms.2019.636
85. Yuniati T, Judistiani RTD, Natalia YA, et al. First trimester maternal vitamin D, ferritin, hemoglobin level and their associations with neonatal birthweight: Result from cohort study on vitamin D status and its impact during pregnancy and childhood in Indonesia. *J Neonatal Perinatal Med.* Oct 8 2019;doi:10.3233/npm-180043
86. Kwiatek-Majkusiak J, Geremek M, Kozirowski D, Tomasiuk R, Szlufik S, Friedman A. Serum levels of hepcidin and interleukin 6 in Parkinson's disease. *Acta Neurobiol Exp (Wars).* 2020;80(3):297-304. <https://pubmed.ncbi.nlm.nih.gov/32990287/>
87. Brandtner A, Tymoszek P, Nairz M, et al. Linkage of alterations in systemic iron homeostasis to patients' outcome in sepsis: a prospective study. *J Intensive Care.* 2020;8:76. doi:10.1186/s40560-020-00495-8
88. Nalado AM, Olorunfemi G, Dix-Peek T, et al. Hepcidin and GDF-15 are potential biomarkers of iron deficiency anaemia in chronic kidney disease patients in South Africa. *BMC Nephrol.* Sep 29 2020;21(1):415. doi:10.1186/s12882-020-02046-7
89. Phillips R, Wood H, Weaving G, Chevassut T. Changes in full blood count parameters with age and sex: results of a survey of almost 900 000 patient

- samples from primary care. *Br J Haematol*. Feb 2021;192(4):e102-e105. doi:10.1111/bjh.17290
90. Mei Z, Addo OY, Jefferds ME, Sharma AJ, Flores-Ayala RC, Brittenham GM. Physiologically based serum ferritin thresholds for iron deficiency in children and non-pregnant women: a US National Health and Nutrition Examination Surveys (NHANES) serial cross-sectional study. *Lancet Haematol*. Aug 2021;8(8):e572-e582. doi:10.1016/s2352-3026(21)00168-x
 91. Garcia-Casal MN, Pasricha SR, Martinez RX, Lopez-Perez L, Peña-Rosas JP. Serum or plasma ferritin concentration as an index of iron deficiency and overload. *Cochrane Database Syst Rev*. May 24 2021;5(5):Cd011817. doi:10.1002/14651858.CD011817.pub2
 92. Auerbach M, Staffa SJ, Brugnara C. Using Reticulocyte Hemoglobin Equivalent as a Marker for Iron Deficiency and Responsiveness to Iron Therapy. *Mayo Clin Proc*. Jun 2021;96(6):1510-1519. doi:10.1016/j.mayocp.2020.10.042
 93. Tahara S, Naito Y, Okuno K, et al. Clinical utility of reticulocyte hemoglobin equivalent in patients with heart failure. *Sci Rep*. Aug 17 2022;12(1):13978. doi:10.1038/s41598-022-18192-x
 94. Hogarth P, Kurian MA, Gregory A, et al. Consensus clinical management guideline for pantothenate kinase-associated neurodegeneration (PKAN). *Molecular genetics and metabolism*. Mar 2017;120(3):278-287. doi:10.1016/j.ymgme.2016.11.004
 95. Ko CW, Siddique SM, Patel A, et al. AGA Clinical Practice Guidelines on the Gastrointestinal Evaluation of Iron Deficiency Anemia. *Gastroenterology*. 2020;159(3):1085-1094. doi:10.1053/j.gastro.2020.06.046
 96. DeLoughery TG, Jackson CS, Ko CW, Rockey DC. AGA Clinical Practice Update on Management of Iron Deficiency Anemia: Expert Review. *Clin Gastroenterol Hepatol*. Aug 2024;22(8):1575-1583. doi:10.1016/j.cgh.2024.03.046
 97. Bohlius J, Bohlke K, Castelli R, et al. Management of Cancer-Associated Anemia With Erythropoiesis-Stimulating Agents: ASCO/ASH Clinical Practice Guideline Update. *Journal of Clinical Oncology*. 2019;37(15):1336-1351. doi:10.1200/jco.18.02142
 98. Lanier JB, Park JJ, Callahan RC. Anemia in Older Adults. *American family physician*. 2018;98(7):437-442. <https://www.aafp.org/afp/2018/1001/p437.html>
 99. Kwo PY, Cohen SM, Lim JK. ACG Clinical Guideline: Evaluation of Abnormal Liver Chemistries. *The American journal of gastroenterology*. Jan 2017;112(1):18-35. doi:10.1038/ajg.2016.517
 100. WHO. WHO guideline on use of ferritin concentrations to assess iron status in individuals and populations. 2020. <https://www.who.int/publications/i/item/9789240000124>
 101. Muñoz M, Acheson AG, Auerbach M, et al. International consensus statement on the peri-operative management of anaemia and iron deficiency. *Anaesthesia*. Feb 2017;72(2):233-247. doi:10.1111/anae.13773
 102. Shander A, Corwin HL, Meier J, et al. Recommendations From the International Consensus Conference on Anemia Management in Surgical Patients (ICCAMS). *Ann Surg*. Apr 1 2023;277(4):581-590. doi:10.1097/sla.0000000000005721
 103. Dignass A, Gasche C, Bettenworth D, et al. European Consensus on the Diagnosis and Management of Iron Deficiency and Anaemia in Inflammatory

- Bowel Diseases. *Journal of Crohn's and Colitis*. 2015;9(3):211-222.
doi:10.1093/ecco-jcc/jju009
104. Niepel D, Klag T, Malek NP, Wehkamp J. Practical guidance for the management of iron deficiency in patients with inflammatory bowel disease. *Therap Adv Gastroenterol*. 2018;11:1756284818769074.
doi:10.1177/1756284818769074
105. Gordon H, Burisch J, Ellul P, et al. ECCO Guidelines on Extraintestinal Manifestations in Inflammatory Bowel Disease. *Journal of Crohn's and Colitis*. 2023;18(1):1-37. doi:10.1093/ecco-jcc/jjad108
106. Siu AL. Screening for Iron Deficiency Anemia and Iron Supplementation in Pregnant Women to Improve Maternal Health and Birth Outcomes: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med*. Oct 6 2015;163(7):529-36. doi:10.7326/m15-1707
107. Siu AL. Screening for Iron Deficiency Anemia in Young Children: USPSTF Recommendation Statement. *Pediatrics*. Oct 2015;136(4):746-52.
doi:10.1542/peds.2015-2567
108. USPSTF. Screening and Supplementation for Iron Deficiency and Iron Deficiency Anemia During Pregnancy: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2024;332(11):906-913.
doi:10.1001/jama.2024.15196
109. Wood JC. Guidelines for quantifying iron overload. *Hematology American Society of Hematology Education Program*. Dec 5 2014;2014(1):210-5.
doi:10.1182/asheducation-2014.1.210
110. Kliger AS, Foley RN, Goldfarb DS, et al. KDOQI US Commentary on the 2012 KDIGO Clinical Practice Guideline for Anemia in CKD. *American Journal of Kidney Diseases*. 2013;62(5):849-859. doi:10.1053/j.ajkd.2013.06.008
111. KDIGO. KDIGO Clinical Practice Guideline for Anemia in Chronic Kidney Disease. *Kidney Int Suppl*. 2012;2(4):279-335. <https://kdigo.org/wp-content/uploads/2016/10/KDIGO-2012-Anemia-Guideline-English.pdf>
112. KDIGO. KDIGO 2025 Clinical Practice Guideline for Anemia in Chronic Kidney Disease (CKD) PUBLIC REVIEW DRAFT. Updated November 4, 2024. <https://kdigo.org/kdigo-2025-anemia-in-ckd-guideline-available-for-public-review/>
113. Madore F, White CT, Foley RN, et al. Clinical practice guidelines for assessment and management of iron deficiency. *Kidney Int Suppl*. Aug 2008;(110):S7-s11. doi:10.1038/ki.2008.269
114. Winkelman JW, Berkowski JA, DelRosso LM, et al. Treatment of restless legs syndrome and periodic limb movement disorder: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med*. Jan 1 2025;21(1):137-152.
doi:10.5664/jcsm.11390
115. Government of British Columbia. Iron Deficiency – Diagnosis and Management. Updated April 17, 2019.
https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/full_fe_unit_update.pdf

Policy Update History:

Approval Date	Effective Date; Summary of Changes
01/12/2026	05/1/2026; Document updated with literature review. The following changes were made to Reimbursement Information: Under #1: added "(no more than one test per month unless otherwise specified)"; 1.a. edited for clarity; 1.b. edited for clarity and to add a frequency, now reads: "b) Once every three weeks for individuals with an iron overload disorder."; 1.h. edited to include frequencies for CKD dependent on if the individual is or isn't receiving hemodialysis, now reads: "h) For individuals who have chronic kidney disease: i) One test every three months if the individual is not receiving dialysis. ii) One test every month if the individual is receiving dialysis." 1.h.ii. becomes its own subcriterion, 1.i. Added new 1.j.: "j) For individuals with restless legs syndrome or periodic limb movement disorder." Added to #2: new 2.d.: "d) For individuals with restless legs syndrome or periodic limb movement disorder." Updated Note 1 to align with symptoms of hemochromatosis (iron overload) which expands to allow arrhythmias, erectile dysfunction, and pain the knuckles, provides specificity in the region of abdominal pain.
01/23/2025	04/15/2025; Document updated with literature review. The following changes were made to Reimbursement Information: Removed "using serum iron and serum iron binding capacity measurements)" from #2; edited #3 to clarify that testing outside of conditions mentioned is not allowed. Now states: For all other situations not addressed above, measurement of ferritin or transferrin levels, including transferrin saturation, is not reimbursable. References revised.
03/15/2024	Document updated with literature review. Reimbursement Information unchanged. References revised; some added.
06/15/2023	Document updated with literature review. Reimbursement information revised for clarity. References revised; some added, others removed.
11/1/2022	New policy