Anemia - Referral Management

RMG: R-0191 (AC)
Link to Codes

MCG Health
Ambulatory Care
30th Edition

Clinical Indications

- Referral for anemia may be indicated for **1 or more** of the following(1)(2):
  - Emergent evaluation or management of **1 or more** of the following(3):
    - Chest pain
    - Cognitive impairment(4)
    - Exertional dyspnea
    - Heart failure(5)
    - Microangiopathic hemolytic anemia (eg, disseminated intravascular coagulation, hemolytic uremic syndrome, thrombotic thrombocytopenic purpura)(6)(7)
    - Orthostatic hypotension
    - Severe complication of sickle cell disease (eg, aplastic crisis, acute chest syndrome, acute stroke)(8)(9)
    - Syncope
    - Tachycardia
  - Gastroenterology referral for evaluation or management of **1 or more** of the following(10)(11)(12)(13)(14):
    - Gastrointestinal blood loss(15)(16)(17)
    - Iron deficiency of unknown etiology (eg, evaluation of celiac disease)(16)(18)(19)(20)
    - Nutritional deficiency
  - General surgery referral for evaluation or management of splenectomy for treatment of hemolytic anemia (eg, hereditary spherocytosis, thalassemia, pyruvate kinase deficiency, autoimmune hemolytic anemia)(21)(22)(23)(24)(25)
  - Genetic medicine referral for evaluation or management of inherited anemias (eg, sideroblastic anemia, sickle cell disorders)(22)(26)(27)(28)(29)(30)(31)
  - Gynecology referral for evaluation or management of abnormal uterine bleeding[A](34)(35)(36)(37)(38)
  - Hematology referral for evaluation or management of **1 or more** of the following(6)(29)(39)(40)(41)(42):
    - Anemia due to blood loss from hereditary bleeding disorder, known or suspected (eg, von Willebrand disease)(35)
    - Anemia unresponsive to appropriate therapy (eg, iron, folate, or vitamin B12 supplementation)(13)(17)
    - Confirmation of diagnosis or etiology[B] needed, as indicated by **1 or more** of the following(17):
      - Acquired hemolytic anemia, known or suspected (eg, microangiopathic hemolytic anemia, nonimmune drug-induced hemolytic anemia, warm autoimmune hemolytic anemia)(4)(25)(43)
      - Congenital hemolytic anemia, known or suspected (eg, hereditary spherocytosis, sickle cell disease, alpha thalassemia, glucose-6-phosphate dehydrogenase deficiency)(21)(22)(27)(35)(43)(44)(45)(46)(47)(48)(49)(50)
      - Macrocytic anemia[C] (eg, chemotherapy-induced anemia, cobalamin (vitamin B12) deficiency, myelodysplasia)(51)(52)
      - Microcytic anemia (eg, anemia of inflammation (ie, anemia of chronic disease), myelodysplasia)
      - Normocytic anemia (eg, anemia of inflammation (ie, anemia of chronic disease), early cobalamin (vitamin B12) deficiency, myelodysplasia)
    - Diagnostic procedure needed (eg, bone marrow examination for suspected myelodysplastic syndrome)(17)(53)
    - Education needed (eg, dietary counseling, trigger avoidance)(13)(29)(40)
    - Intolerance to therapy (eg, oral iron)(54)(55)
    - Medication management (eg, erythropoietin-stimulating agents, hydroxyurea, immunosuppressive therapy, iron chelators, parenteral iron)(13)(23)(35)(49)(56)(57)(58)(59)(60)(61)(62)(63)(64)(65)
    - Multifactorial etiology(52)

- Preoperative anemia(66)(67)
- Therapeutic procedure needed (eg, hematopoietic stem cell transplant, plasma exchange, red blood cell transfusion)(46)(56)(57)(62)(65)(68)
- Unclear diagnosis despite preliminary laboratory testing(62)(69)

- Interventional radiology referral for image-guided bone marrow aspiration or bone marrow biopsy(70)(71)
- Nephrology referral for evaluation or management of anemia associated with chronic kidney disease(64)(72)
- Neurology referral for evaluation or management of neurologic signs and symptoms in patient with macrocytic anemia(59)
- Oncology referral for evaluation or management of anemia associated with cancer or cancer treatment(51)
- Rheumatology referral for evaluation or management of **1 or more** of the following:
  - Anemia of chronic disease, and need for identification of possible underlying inflammatory disease(73)(74)
  - Hemolytic anemia, and need for diagnosis or treatment of underlying cause (eg, systemic lupus)(29)(48)
- Urology referral for evaluation or management of urinary tract blood loss(75)(76)

Evidence Summary

Criteria

The evidence for the clinical indications found in this guideline includes 62 published peer reviewed articles, 7 specialty society or other evidence-based guidelines, 1 Cochrane systematic review, and 3 book sections.

Rationale

Use of this MCG care guideline helps the clinician identify specific complex factors of a patient's condition that may need specialist consultation. It provides evidence-based clinical criteria to help decide when a patient should be referred to a specialist, ensuring timely specialty care. Additionally, this guideline can help limit unnecessary differences in treatment, like variable criteria for emergency or subspecialist referral, thereby promoting equal access and quality of care for similar patients, regardless of location, facility, or clinician.

Related CMS Coverage Guidance

None applicable

References

1. Management of common anemias. In: Goroll AH, Mulley AG Jr., editors. Primary Care Medicine: Office Evaluation and Management of the Adult Patient. 8th ed. Philadelphia, PA: Wolters Kluwer; 2021:771-779. [Context Link 1]
2. Smith ML. Anemia: evaluation of suspected anemia. FP Essentials 2023;530:7-11. [Context Link 1, 2] View abstract...
3. Long B, Koyfman A. Emergency medicine evaluation and management of anemia. Emergency Medicine Clinics of North America 2018;36(3):609-630. DOI: 10.1016/j.emc.2018.04.009. [Context Link 1] View abstract...
4. Kalra SK, Auron M. Anemia and transfusion medicine. Medical Clinics of North America 2024;108(6):1065-1085. DOI: 10.1016/j.mcna.2024.04.002. [Context Link 1, 2] View abstract...
5. Kansagara D, Dyer E, Englander H, Fu R, Freeman M, Kagen D. Treatment of anemia in patients with heart disease: a systematic review. Annals of Internal Medicine 2013;159(11):746-757. DOI: 10.7326/0003-4819-159-11-201312030-00007. [Context Link 1] View abstract...
6. Powell DJ, Achebe MO. Anemia for the primary care physician. Primary Care 2016;43(4):527-542. DOI: 10.1016/j.pop.2016.07.006. [Context Link 1, 2, 3, 4, 5] View abstract...
7. Scully M, et al. A British Society for Haematology Guideline: Diagnosis and management of thrombotic thrombocytopenic purpura and thrombotic microangiopathies. British Journal of Haematology 2023;203(4):546-563. DOI: 10.1111/bjh.19026. (Reaffirmed 2025 Jul) [Context Link 1] View abstract...
8. Pecker LH, Lanzkron S. Sickle cell disease. Annals of Internal Medicine 2021;174(1):Online. DOI: 10.7326/AITC202101190. [Context Link 1] View abstract...
9. Brewin J, Howard J. Sickle cell disease: an update on management. Paediatrics and Child Health 2017;27(11):506-10. DOI: 10.1016/j.paed.2017.07.005. [Context Link 1]
10. Joosten E. Iron deficiency anemia in older adults: A review. Geriatrics & Gerontology International 2018;18(3):373-379. DOI: 10.1111/ggi.13194. [Context Link 1] View abstract...
11. Iron Deficiency Anemia (IDA). Clinical Practice Guideline [Internet] Alberta Medical Association Accelerating Change Transformation Team. 2023 Nov 02 Accessed at: https://actt.albertadoctors.org/Pages/default.aspx. [accessed 2025 Sep 04] [Context Link 1]
12. Ko CW, 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. (Reaffirmed 2025 Jul) [Context Link 1] View abstract...
13. Pasricha SR, Tye-Din J, Muckenthaler MU, Swinkels DW. Iron deficiency. Lancet 2021;397(10270):233-248. DOI: 10.1016/S0140-6736(20)32594-0. [Context Link 1, 2, 3, 4] View abstract...
14. DeLoughery TG, Jackson CS, Ko CW, Rockey DC. AGA Ccinical practice update on management of Iron deficiency anemia: expert review. Clinical Gastroenterology and Hepatology 2024;22(8):1575-1583. DOI: 10.1016/j.cgh.2024.03.046. [Context Link 1] View abstract...

15. American Gastroenterological Association. GI evaluation of iron deficiency anemia: clinical decision support tool. Gastroenterology 2020;159(3):1095. DOI: 10.1053/j.gastro.2020.08.043. [Context Link 1] View abstract...

16. Abou Baker NM, Davis AM. Gastrointestinal evaluation of iron deficiency anemia. Journal of the American Medical Association 2021;326(16):1624-1625. DOI: 10.1001/jama.2021.11604. [Context Link 1, 2] View abstract...

17. Raleigh MF, Yano AS, Shaffer NE. Anemia in infants and children: evaluation and treatment. American Family Physician 2024;110(6):612-620. [Context Link 1, 2, 3, 4] View abstract...

18. Camaschella C. Iron-deficiency anemia. New England Journal of Medicine 2015;372(19):1832-1843. DOI: 10.1056/NEJMra1401038. [Context Link 1] View abstract...

19. Lebwohl B, Sanders DS, Green PHR. Coeliac disease. Lancet 2018;391(10115):70-81. DOI: 10.1016/S0140-6736(17)31796-8. [Context Link 1] View abstract...

20. Chey WD, et al. ACG Clinical Guideline: treatment of helicobacter pylori infection. American Journal of Gastroenterology 2024;119(9):1730-1753. DOI: 10.14309/ajg.0000000000002968. (Reaffirmed 2025 Jul) [Context Link 1]

21. Taher AT, Weatherall DJ, Cappellini MD. Thalassaemia. Lancet 2018;391(10116):155-167. DOI: 10.1016/S0140-6736(17)31822-6. [Context Link 1, 2] View abstract...

22. Musallam KM, et al. Alpha-thalassemia: A practical overview. Blood Reviews 2024;Online. DOI: 10.1016/j.blre.2023.101165. [Context Link 1, 2, 3] View abstract...

23. Yui JC, Brodsky RA. Updates in the management of warm autoimmune hemolytic anemia. Hematology/Oncology Clinics of North America 2022;36(2):325-339. DOI: 10.1016/j.hoc.2021.11.005. [Context Link 1, 2] View abstract...

24. Mentzer WC, Schrier SL. Extrinsic nonimmune hemolytic anemias. In: Hoffman R, et al., editors. Hematology: Basic Principles and Practice. 8th ed. Elsevier; 2023:688-697. [Context Link 1]

25. Michel M, Crickx E, Fattizzo B, Barcellini W. Autoimmune haemolytic anaemias. Nature Reviews. Disease Primers 2024;10(1):82. DOI: 10.1038/s41572-024-00566-2. [Context Link 1, 2] View abstract...

26. Bender MA, Carlberg K. Sickle Cell Disease. [Internet] GeneReviews. 2025 Feb Accessed at: https://www.ncbi.nlm.nih.gov/books/NBK1377/. [created 2003; accessed 2025 Sep 11] [Context Link 1]

27. Christensen RD, Yaish HM, Gallagher PG. A pediatrician's practical guide to diagnosing and treating hereditary spherocytosis in neonates. Pediatrics 2015;135(6):1107-1114. DOI: 10.1542/peds.2014-3516. [Context Link 1, 2] View abstract...

28. Donker AE, et al. Practice guidelines for the diagnosis and management of microcytic anemias due to genetic disorders of iron metabolism or heme synthesis. Blood 2014;123(25):3873-3886; quiz 4005. DOI: 10.1182/blood-2014-01-548776. [Context Link 1] View abstract...

29. Noronha SA. Acquired and congenital hemolytic anemia. Pediatrics in Review 2016;37(6):235-246. DOI: 10.1542/pir.2015-0053. [Context Link 1, 2, 3, 4] View abstract...

30. Al-Samkari H, et al. Diagnosis and management of pyruvate kinase deficiency: international expert guidelines. Lancet. Haematology 2024;11(3):e228-e239. DOI: 10.1016/S2352-3026(23)00377-0. [Context Link 1] View abstract...

31. Harteveld CL, et al. The hemoglobinopathies, molecular disease mechanisms and diagnostics. International Journal of Laboratory Hematology 2022;44 Suppl 1(Suppl 1):28-36. DOI: 10.1111/ijlh.13885. [Context Link 1] View abstract...

32. Committee on Practice Bulletins-Gynecology. Practice bulletin no. 128: diagnosis of abnormal uterine bleeding in reproductive-aged women. Obstetrics & Gynecology 2012 (ACOG reaffirmed 2024);120(1):197-206. DOI: 10.1097/AOG.0b013e318262e320. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...

33. Munro MG, Critchley HOD, Fraser IS, FIGO Menstrual Disorders Committee. The two FIGO systems for normal and abnormal uterine bleeding symptoms and classification of causes of abnormal uterine bleeding in the reproductive years: 2018 revisions. International Journal of Gynaecology and Obstetrics 2018;143(3):393-408. DOI: 10.1002/ijgo.12666. [Context Link 1] View abstract...

34. Friedman AJ, et al. Iron deficiency anemia in women: a practical guide to detection, diagnosis, and treatment. Obstetrical and Gynecological Survey 2015;70(5):342-353. DOI: 10.1097/OGX.0000000000000172. [Context Link 1] View abstract...

35. Connell NT, et al. ASH ISTH NHF WFH 2021 guidelines on the management of von Willebrand disease. Blood Advances 2021;5(1):301-325. DOI: 10.1182/bloodadvances.2020003264. [Context Link 1, 2, 3, 4] View abstract...

36. Screening and management of bleeding disorders in adolescents with heavy menstrual bleeding: ACOG Committee Opinion, Number 785. Obstetrics & Gynecology 2019 (ACOG reaffirmed 2023);134(3):e71-e83. DOI: 10.1097/AOG.0000000000003411. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...

37. Marret H, et al. Clinical practice guidelines on menorrhagia: management of abnormal uterine bleeding before menopause. European Journal of Obstetrics, Gynecology, and Reproductive Biology 2010;152(2):133-7. DOI: 10.1016/j.ejogrb.2010.07.016. [Context Link 1] View abstract...

38. Jain V, Munro MG, Critchley HOD. Contemporary evaluation of women and girls with abnormal uterine bleeding: FIGO Systems 1 and 2. International Journal of Gynaecology and Obstetrics 2023;162 Suppl 2:29-42. DOI: 10.1002/ijgo.14946. [Context Link 1] View abstract...

39. Cascio MJ, DeLoughery TG. Anemia: Evaluation and Diagnostic Tests. Medical Clinics of North America 2017;101(2):263-284. DOI: 10.1016/j.mcna.2016.09.003. [Context Link 1] View abstract...

40. Kujovich JL. Evaluation of anemia. Obstetrics and Gynecology Clinics of North America 2016;43(2):247-264. DOI: 10.1016/j.ogc.2016.01.009. [Context Link 1, 2] View abstract...

41. Lopez A, Cacoub P, Macdougall IC, Peyrin-Biroulet L. Iron deficiency anaemia. Lancet 2016;387(10021):907-916. DOI: 10.1016/S0140-6736(15)60865-0. [Context Link 1] View abstract...

42. Lin JC, Benz EJ Jr. Approach to anemia in the adult and child. In: Hoffman R, et al., editors. Hematology: Basic Principles and Practice. 8th ed. Elsevier; 2023:463-472. [Context Link 1, 2, 3]

43. Scheckel CJ, Go RS. Autoimmune hemolytic anemia: diagnosis and differential diagnosis. Hematology/Oncology Clinics of North America 2022;36(2):315-324. DOI: 10.1016/j.hoc.2021.12.001. [Context Link 1, 2] View abstract...
44. Viprakasit V, Ekwattanakit S. Clinical classification, screening and diagnosis for thalassemia. Hematology/Oncology Clinics of North America 2018;32(2):193-211. DOI: 10.1016/j.hoc.2017.11.006. [Context Link 1] View abstract...
45. Taher AT, Musallam KM, Cappellini MD. ß-Thalassemias. New England Journal of Medicine 2021;384(8):727-743. DOI: 10.1056/NEJMra2021838. [Context Link 1] View abstract...
46. Berentsen S, Barcellini W. Autoimmune hemolytic anemias. New England Journal of Medicine 2021;385(15):1407-1419. DOI: 10.1056/NEJMra2033982. [Context Link 1, 2] View abstract...
47. Phillips J, Henderson AC. Hemolytic anemia: evaluation and differential diagnosis. American Family Physician 2018;98(6):354-361. [Context Link 1] View abstract...
48. Jager U, et al. Diagnosis and treatment of autoimmune hemolytic anemia in adults: Recommendations from the First International Consensus meeting. Blood Reviews 2020;41:100648. DOI: 10.1016/j.blre.2019.100648. [Context Link 1, 2] View abstract...
49. Fattizzo B, et al. Diagnosis and management of Evans syndrome in adults: first consensus recommendations. Lancet. Haematology 2024;11(8):e617-e628. DOI: 10.1016/S2352-3026(24)00144-3. [Context Link 1, 2] View abstract...
50. Agarwal AM, Rets A. Laboratory approach to investigation of anemia with a focus on pyruvate kinase deficiency. International Journal of Laboratory Hematology 2020;42 Suppl 1:107-112. DOI: 10.1111/ijlh.13200. [Context Link 1] View abstract...
51. Anand S, Burkenroad A, Glaspy J. Workup of anemia in cancer. Clinical Advances in Hematology and Oncology 2020;18(10):640-646. [Context Link 1, 2] View abstract...
52. Beladan CC, Botezatu SB. Anemia and management of heart failure patients. Heart Failure Clinics 2021;17(2):195-206. DOI: 10.1016/j.hfc.2020.12.002. [Context Link 1, 2] View abstract...
53. Koury MJ, Hausrath DJ. Macrocytic anemias. Current Opinion in Hematology 2024;31(3):82-88. DOI: 10.1097/MOH.0000000000000804. [Context Link 1] View abstract...
54. Mattiello V, Schmugge M, Hengartner H, von der Weid N, Renella R, SPOG Pediatric Hematology Working Group. Diagnosis and management of iron deficiency in children with or without anemia: consensus recommendations of the SPOG Pediatric Hematology Working Group. European Journal of Pediatrics 2020;179(4):527-545. DOI: 10.1007/s00431-020-03597-5. [Context Link 1] View abstract...
55. Wong C. Iron deficiency anaemia. Paediatrics and Child Health 2017;27(11):527-529. DOI: 10.1016/j.paed.2017.08.004. [Context Link 1]
56. Shah FT, et al. Guidelines for the monitoring and management of iron overload in patients with haemoglobinopathies and rare anaemias. British Journal of Haematology 2022;196(2):336-350. DOI: 10.1111/bjh.17839. (Reaffirmed 2025 Jul) [Context Link 1, 2] View abstract...
57. Chou ST, et al. American Society of Hematology 2020 guidelines for sickle cell disease: transfusion support. Blood Advances 2020;4(2):327-355. DOI: 10.1182/bloodadvances.2019001143. [Context Link 1, 2] View abstract...
58. Yawn BP, et al. Management of sickle cell disease: summary of the 2014 evidence-based report by expert panel members. Journal of the American Medical Association 2014;312(10):1033-1048. DOI: 10.1001/jama.2014.10517. [Context Link 1] View abstract...
59. Rojas Hernandez CM, Oo TH. Advances in mechanisms, diagnosis, and treatment of pernicious anemia. Discovery Medicine 2015;19(104):159-168. [Context Link 1, 2] View abstract...
60. Piel FB, Steinberg MH, Rees DC. Sickle cell disease. New England Journal of Medicine 2017;376(16):1561-1573. DOI: 10.1056/NEJMra1510865. [Context Link 1] View abstract...
61. Nevitt SJ, Jones AP, Howard J. Hydroxyurea (hydroxycarbamide) for sickle cell disease. Cochrane Database of Systematic Reviews 2017, Issue 4. Art. No.: CD002202. DOI: 10.1002/14651858.CD002202.pub2. [Context Link 1] View abstract...
62. Kulasekararaj A, et al. Guidelines for the diagnosis and management of adult aplastic anaemia: a British Society for Haematology guideline. British Journal of Haematology 2024;204(3):784-804. DOI: 10.1111/bjh.19236. (Reaffirmed 2024 Aug) [Context Link 1, 2, 3] View abstract...
63. Chonat S, Quinn CT. Current standards of care and long term outcomes for thalassemia and sickle cell disease. Advances in Experimental Medicine and Biology 2017;1013:59-87. DOI: 10.1007/978-1-4939-7299-9_3. [Context Link 1] View abstract...
64. Chronic Kidney Disease: Assessment and Management. NICE Guidance NG203 [Internet] National Institute for Health and Care Excellence. 2021 Nov Accessed at: https://www.nice.org.uk/guidance. [created 2021; accessed 2025 Apr 07] [Context Link 1, 2]
65. Onishi Y. Aplastic anemia: history and recent developments in diagnosis and treatment. International Journal of Hematology 2024;119(3):217-219. DOI: 10.1007/s12185-024-03715-1. [Context Link 1, 2] View abstract...
66. Shander A, et al. Recommendations from the international consensus conference on anemia management in surgical patients (ICCAMS). Annals of Surgery 2023;277(4):581-590. DOI: 10.1097/SLA.0000000000005721. [Context Link 1] View abstract...
67. Rumpf F, et al. Preoperative hemoglobin thresholds for survival equity in women and men. Frontiers in Medicine 2024;11:Online. DOI: 10.3389/fmed.2024.1334773. [Context Link 1] View abstract...
68. Young NS. Aplastic anemia. New England Journal of Medicine 2018;379(17):1643-1656. DOI: 10.1056/NEJMra1413485. [Context Link 1] View abstract...
69. Archer NM, Brugnara C. Diagnosis of iron-deficient states. Critical Reviews in Clinical Laboratory Sciences 2015;52(5):256-272. DOI: 10.3109/10408363.2015.1038744. [Context Link 1] View abstract...
70. Tomasian A, Jennings JW. Bone marrow aspiration and biopsy: techniques and practice implications. Skeletal Radiology 2022;51(1):81-88. DOI: 10.1007/s00256-021-03882-w. [Context Link 1] View abstract...
71. Tomasian A, Long J, W Jennings J. Fluoroscopy-guided bone marrow aspiration and biopsy: technical note. Diagnostic and Interventional Radiology 2021;27(2):283-284. DOI: 10.5152/dir.2021.20243. [Context Link 1] View abstract...

72. Babitt JL, et al. Controversies in optimal anemia management: conclusions from a kidney disease: improving global outcomes (KDIGO) conference. Kidney International 2021;99(6):1280-1295. DOI: 10.1016/j.kint.2021.03.020. [Context Link 1] View abstract...
73. Sankaran J, Rodriguez V, Jacob EK, Kreuter JD, Go RS. Autoimmune hemolytic anemia in children: Mayo Clinic experience. Journal of Pediatric Hematology/Oncology 2016;38(3):e120-e124. DOI: 10.1097/MPH.0000000000000542. [Context Link 1] View abstract...
74. Fraenkel PG. Anemia of inflammation: a review. Medical Clinics of North America 2017;101(2):285-296. DOI: 10.1016/j.mcna.2016.09.005. [Context Link 1] View abstract...
75. Avellino GJ, Bose S, Wang DS. Diagnosis and management of hematuria. Surgical Clinics of North America 2016;96(3):503-515. DOI: 10.1016/j.suc.2016.02.007. [Context Link 1] View abstract...
76. Nielsen M, Qaseem A, High Value Care Task Force of the American College of Physicians. Hematuria as a marker of occult urinary tract cancer: advice for high-value care from the American College of Physicians. Annals of Internal Medicine 2016;164(7):488-497. DOI: 10.7326/M15-1496. [Context Link 1] View abstract...

Footnotes

[A] Abnormal uterine bleeding includes heavy menstrual bleeding (formally called menorrhagia and generally defined as excessive bleeding at regular intervals of more than 80 mL of blood loss for more than 7 days' duration, or requiring more than one pad/tampon per 1 to 2 hours), polymenorrhea (bleeding intervals of less than 21 days), or intermenstrual bleeding (previously referred to as metrorrhagia (bleeding that occurs between regular menstrual cycles)).(32)(33) [A in Context Link 1]

[B] Categorizing anemia based on reticulocyte count may help to determine whether a hypoproliferative state of red blood cell production is present, which manifests with a low reticulocyte count. When the reticulocyte count is elevated, the anemia may be due to chronic blood loss or acquired or congenital hemolysis, which leads to a hyperproliferative state of red blood cell production.(6)(42) The mean corpuscular volume may also help to categorize anemia as macrocytic, microcytic, or normocytic.(2)(6)(42) [B in Context Link 1]

[C] Macrocytic anemias may be megaloblastic or nonmegaloblastic. Megaloblastic anemia occurs when DNA synthesis is impaired (eg, chemotherapy-induced, folate deficiency, or cobalamin (vitamin B12) deficiency). Nonmegaloblastic anemia may result from alcohol abuse, hypothyroidism, liver disease, medication use (eg, antiviral therapy, azathioprine, hydroxyurea), myelodysplasia, or reticulocytosis.(6) [C in Context Link 1]

Definitions

Orthostatic hypotension

- Orthostatic hypotension,[A][B] as indicated by **1 or more** of the following(1)(2)(3):
  - Fall in SBP of 20 mm Hg or more 1 to 3 minutes after patient sits or stands from recumbent position
  - Fall in DBP of 10 mm Hg or more 1 to 3 minutes after patient sits or stands from recumbent position

References

1. Shibao C, Lipsitz LA, Biaggioni I, American Society of Hypertension Writing Group. Evaluation and treatment of orthostatic hypotension. Journal of the American Society of Hypertension 2013 Jul-Aug;7(4):317-324. DOI: 10.1016/j.jash.2013.04.006.
2. Dalal AS, Van Hare GF. Syncope. In: Kliegman RM, et al., editors. Nelson Textbook of Pediatrics. 22nd ed. Elsevier; 2025:592-599.
3. Fang JC, O'Gara PT. History and physical examination: an evidence-based approach. In: Libby P, Bonow RO, Mann DL, Tomaselli GF, Bhatt DL, Solomon SD, editors. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. 12th ed. Elsevier; 2022:123-140.

Footnotes

A. Concomitant measurements of the heart rate are important to measure to help diagnose subtypes of orthostatic hypotension (eg, the lack of a compensatory increase in heart rate is typical of autonomic failure and an exaggerated tachycardia may be reflective of volume depletion). However, the heart rate is not a component of the definition of orthostatic hypotension, which relies upon blood pressure alone.(1)(2)(3)

B. Criteria based upon clinician acquired numeric values (eg, vital signs, oxygen saturation) should be used if they are accurate reflections of the patient's condition. Transitory findings (eg, abnormal only upon initial emergency department intake or only one time out of multiple readings) that rapidly improve with no or minimal treatment usually do not reflect disease severity or risk for deterioration. This does not imply that an initial or one-time reading cannot ever be applicable. The goal is to separate erroneous or incidental findings from those that truly represent the patient's clinical picture.

Tachycardia

- Tachycardia,[A][B] as indicated by **1 or more** of the following:
  - Heart rate greater than 100 beats per minute in adult[A][B](1)
  - Heart rate greater than 85 beats per minute in child 13 to 17 years of age[A][C](2)
  - Heart rate greater than 95 beats per minute in child 6 to 12 years of age[A][C](2)

- Heart rate greater than 110 beats per minute in child 1 to 5 years of age[A][C](2)
- Heart rate greater than 120 beats per minute in infant 3 to 11 months of age[A][C](2)
- Heart rate greater than 150 beats per minute in infant 1 or 2 months of age[A][C](2)

References

1. Schriger DL. Approach to the patient with abnormal vital signs. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:32-35.
2. Anderson CC, Kapoor S, Mark TE. Pediatric parameters and equipment. In: Anderson CC, Kapoor S, Mark TE, editors. The Harriet Lane Handbook: A Manual for Pediatric House Officers. 23rd ed. Elsevier; 2024:i-iii.

Footnotes

A. Criteria based upon clinician acquired numeric values (eg, vital signs, oxygen saturation) should be used if they are accurate reflections of the patient's condition. Transitory findings (eg, abnormal only upon initial emergency department intake or only one time out of multiple readings) that rapidly improve with no or minimal treatment usually do not reflect disease severity or risk for deterioration. This does not imply that an initial or one-time reading cannot ever be applicable. The goal is to separate erroneous or incidental findings from those that truly represent the patient's clinical picture.

B. Interpretation of heart rate requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline heart rate, medications, and clinical impact. For example, an elderly patient on a beta-blocker medication with a baseline resting heart rate of 60 beats per minute may be clinically tachycardic at a heart rate of 94 beats per minute. Likewise, a patient who is upset, in pain, or nervous in the emergency department with a heart rate of 106 beats per minute may meet the technical definition of tachycardia, but this tachycardia (absent associated findings such as chest pain or hypotension) may not be clinically important. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term tachycardia. Whether a heart rate above or below the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment.

C. Interpretation of heart rate requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline heart rate, medications, and clinical impact. A patient who is upset, in pain, or nervous in the emergency department with an elevated heart rate may meet the technical definition of tachycardia, but this tachycardia (absent associated findings such as hypotension) may not be clinically important. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term tachycardia. Whether a heart rate above or below the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment.

Codes

ICD-10 Diagnosis: B60.00, B60.01, B60.02, B60.03, B60.09, D46.0, D46.1, D46.20, D46.21, D46.22, D46.4, D46.9, D46.A, D46.B, D46.C, D46.Z, D50.0, D50.1, D50.8, D50.9, D51.0, D51.1, D51.2, D51.3, D51.8, D51.9, D52.0, D52.1, D52.8, D52.9, D53.0, D53.1, D53.2, D53.8, D53.9, D55.0, D55.1, D55.21, D55.29, D55.3, D55.8, D55.9, D56.0, D56.1, D56.2, D56.3, D56.4, D56.5, D56.8, D56.9, D57.00, D57.01, D57.02, D57.03, D57.04, D57.09, D57.1, D57.20, D57.211, D57.212, D57.213, D57.214, D57.218, D57.219, D57.3, D57.40, D57.411, D57.412, D57.413, D57.414, D57.418, D57.419, D57.42, D57.431, D57.432, D57.433, D57.434, D57.438, D57.439, D57.44, D57.451, D57.452, D57.453, D57.454, D57.458, D57.459, D57.80, D57.811, D57.812, D57.813, D57.814, D57.818, D57.819, D58.0, D58.1, D58.2, D58.8, D58.9, D59.0, D59.10, D59.11, D59.12, D59.13, D59.19, D59.2, D59.30, D59.31, D59.32, D59.39, D59.4, D59.5, D59.6, D59.8, D59.9, D60.0, D60.1, D60.8, D60.9, D61.01, D61.03, D61.09, D61.1, D61.2, D61.3, D61.810, D61.811, D61.818, D61.82, D61.89, D61.9, D62, D63.0, D63.1, D63.8, D64.0, D64.1, D64.2, D64.3, D64.4, D64.81, D64.89, D64.9, O90.81, O99.011, O99.012, O99.013, O99.019, O99.02, O99.03, P61.2, P61.3, P61.4, R71.0, R71.8, U09.9, Z13.0, Z94.81 [Hide]

Last Update: 1/25/2026 1:31:07 AM
Build Number: 30.0.2026012500524.025256