Vascular Disease GRG

GRG: MG-VAS (ISC GRG)

MCG Health
General Recovery Care
30th Edition
Medical Admission Case Management GRG GRG

Note: An appropriate Optimal Recovery Guideline (ORG) should be identified and used whenever possible. This General Recovery Guideline (GRG) is intended to aid only in situations in which no ORG appears applicable.

Care Planning - Inpatient Admission and Alternatives

Clinical Indications for Admission to Inpatient Care

- Hospital admission is needed for appropriate care of the patient because of **1 or more** of the following(1)(2)(3):
  - Acute ischemia due to peripheral vascular disease, as indicated by **1 or more** of the following[A](1)(3)(4)(5)(6)(7):
    - Tissue necrosis
    - Severe pain
    - Acute pulselessness
    - Other evidence of acute severe ischemia (eg, lactic acidosis, acute motor dysfunction)

- Gangrene requiring intensity and frequency of care not amenable to observation care(1)

− Life-threatening or limb-threatening skin ulcer, as indicated by **1 or more** of the following(8):
  - Surrounding cellulitis unresponsive to outpatient treatment
  - Lymphangitis
  - Bacteremia
  - Wet gangrene

− Urgent inpatient anticoagulation needed (eg, close clinical monitoring necessary), as indicated by **1 or more** of the following(9):
  - Acute thrombotic disorder suspected (eg, thrombotic storm (also known as "catastrophic thrombosis"),[B] thrombotic thrombocytopenic purpura, purpura fulminans)(10)(11)(12)(13)(14)
  - Thrombosis of organ at high risk of complications or organ failure (eg, mesenteric thrombosis, cerebral sinus thrombosis, portal vein thrombosis)(12)(15)(16)
  - Chronic limb-threatening ischemia (also known as critical limb ischemia)[C](1)(2)(5)(6)

- Inpatient monitoring of initiation or intensification of anticoagulation needed, as indicated by **ALL** of the following:
  - Patient at high risk for bleeding complications upon initiation of anticoagulation
  - Monitoring of response to anticoagulation needed beyond observation care

− Initial inpatient care needed for anticoagulation therapy,[D] as indicated by **ALL** of the following:
  - Temporary subtherapeutic anticoagulation unacceptable
  - Inpatient anticoagulation needed

- Significant bleeding or allergic, autoimmune (thrombocytopenia), or coagulopathic reaction in response to anticoagulation (current)(18)
- Acute or newly diagnosed major vessel (eg, aorta) dissection, rupture, fistula, or leakage[E](19)(20)(21)(22)(23)(24)(25)
- Aneurysmal or pseudoaneurysmal disease requiring medical treatment or testing (eg, severe pain, testing that can only be performed as an inpatient)(22)
- Vascular trauma requiring embolization, ligation, repair; or trial of nonoperative management requires monitoring (eg, repeated imaging, hemoglobin) beyond observation care(26)(27)
- **Vascular Disease** condition, symptom, or finding for which observation care has failed or is not considered appropriate. See General Criteria: Observation Care ISC, General Admission Criteria GRG, or Pediatric General Admission Criteria GRG guideline as appropriate.

Supplemental Medicare Criteria

Note: These criteria are to be considered for Medicare patients if none of the standard Clinical Indications for Admission to Inpatient Care apply.

- Patient with Medicare coverage requires inpatient admission, as indicated by **1 or more** of the following(28):
  - Admitting clinician expects patient to require hospital care for less than 2 midnights but, based on complex medical factors documented in medical record, judges that inpatient care is necessary (case-by-case exception). The medical record must contain sufficient documentation to make clear the rationale for the exception.
  - Patient has need for intubation and mechanical ventilation that is new (ie, did not present to hospital already on mechanical ventilation).
  - Treatment plan for hospital admission includes procedure designated by CMS as inpatient only (ie, on Inpatient Only List).
  - Patient has already received medically necessary hospital care that meets 2-midnight benchmark (excluding activities such as triage/intake, delays in provision of care, or time added due to patient or family convenience). The medical record must contain sufficient documentation to make clear the medical necessity for hospital care across 2 or more midnights.

Alternatives to Admission

- Alternatives may include(2)(3)(4)(22):

- Outpatient care in emergency department, rapid treatment site, urgent care center, or medical office
  - History and physical examination
  - Pulse and perfusion assessment(1)(29)
  - Tissue perfusion monitoring(29)
  - Skin, wound, or local ulcer care(8)
  - Ultrasound, angiography, venography, digital subtraction angiogram, CT angiogram, or MR angiogram as indicated(30)(31)
  - Arrangement for elective outpatient endovascular intervention or vascular surgical procedure(24)(32)(33)
  - Outpatient declotting procedure
  - Outpatient anticoagulation and follow-up(17)(34)(35)
  - Platelet inhibitors(1)(34)(36)
  - Outpatient medical therapy (eg, antihypertensive medications, lipid-lowering therapy)
  - Multimodal analgesia (37)
  - Periodic surveillance by CT or ultrasound(20)
- Home care
  - Wound and skin care(3)
  - IV antibiotics
  - Pain management(37)
  - Diabetes assessment
  - Assessment for vascular compromise(3)(38)
  - Low-molecular-weight heparin and transition to oral anticoagulation
  - Observation with active imaging surveillance(20)(39)(40)
- Recovery facility
  - IV antibiotics
  - Complex wound and ulcer care(3)(8)
  - Intensive observation for vascular compromise, gangrene, or other complications(3)
  - Low-molecular-weight heparin and transition to oral anticoagulation

Hospitalization

General Recovery Course

Stage	Level of Care	Clinical Status	Interventions
1	• ICU or intermediate care[F] • Social Determinants of Health Assessment • Discharge planning. See Discharge Planning Tool SR.	• **Clinical Indications met[G]**	• Inpatient interventions as needed • Vascular and neurologic checks

2	• Floor • Social Determinants of Health Assessment	• **No ICU or intermediate care needs**	• Inpatient interventions continue • Transition to oral routes • Taper off IV medications • Vascular and neurologic checks as appropriate
3	• **Activity level acceptable** • Social Determinants of Health Assessment • Floor to discharge • Complete discharge planning	• **Hemodynamic stability** • **Vascular, soft tissue, and wound status acceptable** • **No infection, or status acceptable** • **Pain and nausea absent or adequately managed** • **General Discharge Criteria met**	• **Vascular access established or not needed** • **No anticoagulation required, or regimen has been established** • **Intake acceptable** • **No inpatient interventions needed**

(1)(3)(5)(6)(22)(25)(27)(41)

Recovery Milestones are indicated in **bold**.

Benchmark Length of Stay (BLOS): Access diagnosis and procedure code-specific BLOS via Search functions.

Discharge Criteria

- Continued inpatient stay is needed until **1 or more** of the following are present:
  - Acceptable patient status for next level of care is achieved.
  - **ALL** of the following are present:
    - Hemodynamic stability, as indicated by **1 or more** of the following:
      - Hemodynamic abnormalities at baseline or acceptable for next level of care
      - Patient hemodynamically stable, as indicated by **ALL** of the following(42)(43):
        - Tachycardia absent
        - Hypotension absent
        - No evidence of inadequate perfusion (eg, no myocardial ischemia)
        - No other hemodynamic abnormalities (eg, no Orthostatic hypotension)
    - Vascular, soft tissue, and wound status acceptable, as indicated by **1 or more** of the following(44)(45)(46)(47):
      - No vascular, soft tissue, or wound problems
      - Status acceptable, as indicated by **ALL** of the following:
        - No significant ischemia
        - No Bacteremia
        - No evidence of compartment syndrome
        - Neuromotor function at baseline or expected level of recovery and appropriate for management at next level of care
        - No new wound dehiscence or hematoma that cannot be managed at next level of care
        - Tissue necrosis absent, or treatment plan appropriate for next level of care
        - Vascular, soft tissue, and wound management appropriate for next level of care

- No infection, or status acceptable, as indicated by **1 or more** of the following(48)(49)(50)(51)(52):
  - No infection present
  - Infection status acceptable for next level of care, as indicated by **ALL** of the following(53):
    - WBC count normal, stable, or declining with treatment
    - Adequate treatment performable at next level of care
    - Organism and sensitivities identified, or adequate clinical response to empiric therapy
    - Repeat cultures negative or not needed
- Vascular access established or not needed
- No anticoagulation required, or regimen has been established

- Pain and nausea absent or adequately managed, as indicated by **1 or more** of the following(54)(55)(56)(57)(58):
  - No pain or nausea
  - Minimal discomfort on oral medications
  - Pain and nausea managed on regimen performable at next level of care
- Activity level acceptable, as indicated by **1 or more** of the following:
  - Patient ambulatory and can perform ADL as appropriate for age and development
  - Activity at baseline
  - Activity level acceptable for next level of care
- Intake acceptable, as indicated by **1 or more** of the following(59):
  - Oral hydration, medications, and diet
  - Enteral hydration, medications, and diet
  - Administration routes performable at next level of care
- No inpatient interventions needed; examples include:
  - Vital signs, neurologic signs, or vascular checks more often than feasible at next level of care
  - Cardiac or respiratory monitoring
  - IV fluid to replace significant ongoing losses
  - Urgent debridement or skin grafting planned
  - IV anticoagulation, vasodilators, or platelet inhibitors
  - Emergent catheterization, angioplasty, or surgery
  - Hemodialysis in unstable patient
- General Discharge Criteria GRG met or Pediatric General Discharge Criteria GRG met (if either is relevant or necessary for patient's condition)

Case Management

See Medical Admission Case Management GRG GRG for further information.

Discharge Destination

- Post-hospital levels of admission may include:
  - Home.
  - Home healthcare. See Medical Admission Home Care GRG HC or Geriatric Admission Home Care GRG HC for further information.

- Recovery facility care. See Medical Admission Recovery Facility Care GRG RFC or Geriatric Admission Recovery Facility Care GRG RFC for further information.
- Inpatient rehabilitation facility. See Inpatient Rehabilitation Facility (IRF) Admission Recovery Facility Care GRG RFC for further information.

Evidence Summary

Criteria

The evidence for the clinical indications found in this guideline includes 11 published peer reviewed articles, 7 specialty society or other evidence-based guidelines, and 8 book sections.

Rationale

Use of this MCG care guideline helps the clinician identify patient-specific complex clinical factors that make it reasonable to expect a necessity for hospital care across 2 or more midnights. The evidence-based clinical criteria assist the clinician in the decision to appropriately admit a patient to inpatient care. For Medicare enrollees, MCG care guidelines also support the clinician in the decision to appropriately admit a patient to inpatient care when there is not an expectation of 2 or more midnights of hospital care (eg, CMS' Two-Midnight Rule exceptions).

Use of these evidence-based clinical criteria to support decision making around the need for inpatient treatment is of clinical benefit to the patient and is crucial for quality patient care. Use of evidence-based clinical criteria ensures patients receive the most appropriate care for their specific condition, reduces unnecessary risks, promotes recovery, and provides a standard that can reduce disparities in care. Evidence-based clinical criteria not only help align treatment decisions with best practice, but they can also help reduce unwarranted variation in care by fostering consistency and equality in healthcare provision across regions and facilities. Appropriate use of the evidence-based clinical criteria in conjunction with the Supplemental Medicare Criteria ensures Medicare patients receive full access to Medicare benefits (eg, inpatient care), without risk of delay or decreased access, based on variables such as clinical severity of illness, length of provision of medically necessary hospital-level care, or satisfaction of specified Medicare criteria as directed by CMS. Use of these criteria will help ensure that the patient receives necessary care in the appropriate setting.

Related CMS Coverage Guidance

This guideline supplements but does not replace, modify, or supersede existing Medicare regulations or applicable National Coverage Determinations (NCDs) or Local Coverage Determinations (LCDs).

Code of Federal Regulations (CFR): 42 CFR 412.3(28); 42 CFR 419.22(60); 42 CFR 422.101(61)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 1 - Inpatient Hospital Services Covered Under Part A(62); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 6 - Hospital Services Covered Under Part B(63); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(64); CMS IOM Publication 100-08, Medicare Program Integrity Manual, Chapter 6, Section 6.5 - Medical Review of Inpatient Hospital Claims for Part A Payment(65)

Medicare Coverage Determinations: Medicare Coverage Database(66)

References

1. Gornik HL, et al. 2024 ACC/AHA/AACVPR/APMA/ABC/SCAI/SVM/SVN/SVS/SIR/VESS guideline for the management of lower extremity peripheral artery disease: a report of the American College of Cardiology/American Heart Association Joint committee on clinical practice guidelines. Circulation 2024;149(24):Online. DOI:

10.1161/CIR.0000000000001251. [Context Link 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12] View abstract...

2. Mills JL Sr, Pallister ZS. Peripheral arterial disease. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, editors. Sabiston Textbook of Surgery. 21st ed. Elsevier; 2022:1767-1791. [Context Link 1, 2, 3]
3. White CJ. Atherosclerotic peripheral arterial disease. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:461-466.e1. [Context Link 1, 2, 3, 4, 5, 6, 7, 8, 9]
4. Aufderheide TP. Peripheral arteriovascular disease. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:1008-1021.e3. [Context Link 1, 2]
5. Bailey SR, et al. ACC/AHA/SCAI/SIR/SVM 2018 appropriate use criteria for peripheral artery intervention: a report of the American College of Cardiology Appropriate Use Criteria Task Force, American Heart Association, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, and Society for Vascular Medicine. Journal of the American College of Cardiology 2019;73(2):214-237. DOI: 10.1016/j.jacc.2018.10.002. (Reaffirmed 2025 Jul) [Context Link 1, 2, 3, 4] View abstract...
6. Conte MS, et al. Global vascular guidelines on the management of chronic limb-threatening ischemia. Journal of Vascular Surgery 2019;69(6S):3S-125S.e40. DOI: 10.1016/j.jvs.2019.02.016. [Context Link 1, 2, 3, 4, 5] View abstract...
7. Bonaca MP, Creager MA. Peripheral artery diseases. 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; 2022:837-858. [Context Link 1]
8. Schneider C, Stratman S, Kirsner RS. Lower extremity ulcers. Medical Clinics of North America 2021;105(4):663-679. DOI: 10.1016/j.mcna.2021.04.006. [Context Link 1, 2, 3] View abstract...
9. Stevens SM, et al. Antithrombotic therapy for VTE disease: second update of the CHEST guideline and expert panel report. Chest 2021;160(6):e545-e608. DOI: 10.1016/j.chest.2021.07.055. (Reaffirmed 2025 Jan) [Context Link 1] View abstract...
10. Franchini M, Focosi D, Pezzo MP, Mannucci PM. Catastrophic thrombosis: a narrative review. Seminars in Thrombosis and Hemostasis 2024;Online. DOI: 10.1055/s-0044-1788790. [Context Link 1, 2] View abstract...
11. Streiff MB, et al. Cancer-Associated Venous Thromboembolic Disease. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 22 Accessed at: https://www.nccn.org/. [accessed 2025 Jun 05] [Context Link 1]
12. Tumian NR, Hunt BJ. Clinical management of thrombotic antiphospholipid syndrome. Journal of Clinical Medicine 2022;11(3):735. DOI: 10.3390/jcm11030735. [Context Link 1, 2] View abstract...
13. Kalpatthi R, Kiss JE. Thrombotic thrombocytopenic purpura, heparin-induced thrombocytopenia, and disseminated intravascular coagulation. Critical Care Clinics 2020;36(2):357-377. DOI: 10.1016/j.ccc.2019.12.006. [Context Link 1] View abstract...
14. Bendapudi PK, Losman JA. How I diagnose and treat acute infection-associated purpura fulminans. Blood 2025;145(13):1358-1368. DOI: 10.1182/blood.2024025078. [Context Link 1] View abstract...
15. Scallan OH, Duncan AA. Current approaches for mesenteric ischemia and visceral aneurysms. Surgical Clinics of North America 2023;103(4):703-731. DOI: 10.1016/j.suc.2023.04.017. [Context Link 1] View abstract...
16. Northup PG, et al. Vascular liver disorders, portal vein thrombosis, and procedural bleeding in patients with liver fisease: 2020 practice guidance by the American Association for the Study of Liver Diseases. Hepatology 2021;73(1):366-413. DOI: 10.1002/hep.31646. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...
17. Joglar JA, et al. 2023 ACC/AHA/ACCP/HRS Guideline for the diagnosis and management of atrial fibrillation: a report of the American College of Cardiology/American Heart Association joint committee on clinical practice guidelines. Journal of the American College of Cardiology 2024;149(1):Online. DOI: 10.1016/j.jacc.2023.08.017. (Reaffirmed 2025 Mar) [Context Link 1, 2, 3, 4] View abstract...
18. American College of Emergency Physicians Clinical Policies Subcommittee (Writing Committee) on Throm, et al. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected acute venous thromboembolic disease. Annals of Emergency Medicine 2018;71(5):e59-e109. DOI: 10.1016/j.annemergmed.2018.03.006. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...
19. Isselbacher EM, et al. 2022 ACC/AHA guideline for the diagnosis and management of aortic disease: a report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. Circulation 2022;146(24):e334-e482. DOI: 10.1161/CIR.0000000000001106. (Reaffirmed 2025 Mar) [Context Link 1, 2] View abstract...

20. Mazzolai L, et al. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. European Heart Journal 2024;45(36):3538-3700. DOI: 10.1093/eurheartj/ehae179. (Reaffirmed 2025 Jun 05) [Context Link 1, 2, 3, 4] View abstract...
21. MacGillivray TE, et al. The Society of Thoracic Surgeons/American Association for Thoracic Surgery Clinical Practice Guidelines on the Management of Type B Aortic Dissection. Annals of Thoracic Surgery 2022;Online. DOI: 10.1016/j.athoracsur.2021.11.002. [Context Link 1, 2] View abstract...
22. Braverman AC, Schermerhorn M. Diseases of the aorta. 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; 2022:806-836. [Context Link 1, 2, 3, 4]
23. Marill KA. Aortic dissection. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:991-998.e1. [Context Link 1]
24. Colwell CB. Abdominal aortic aneurysm. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:999-1007.e2. [Context Link 1, 2]
25. Carrel T, Sundt TM, von Kodolitsch Y, Czerny M. Acute aortic dissection. Lancet 2023;401(10378):773-788. DOI: 10.1016/S0140-6736(22)01970-5. [Context Link 1, 2] View abstract...
26. Wahlgren CM, et al. European Society for Vascular Surgery (ESVS) 2025 clinical practice guidelines on the management of vascular trauma. European Journal of Vascular and Endovascular Surgery 2025;DOI: 10.1016/j.ejvs.2024.12.018. [Context Link 1] View abstract...
27. Carmichael SP, Mowery NT, Martin RS, Meredith JW. Management of acute trauma. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL, editors. Sabiston Textbook of Surgery. 21st ed. Elsevier; 2022:386-428. [Context Link 1, 2]
28. Centers for Medicare and Medicaid Services. "Admissions." 42 CFR 412.3 Washington, DC 2025 Jul [accessed 2025 Jul 22] Accessed at: https://www.ecfr.gov/current/title-42/chapter-IV/subchapter-B/part-412. [Context Link 1, 2]
29. Geiderman JM, Torbati S. General principles of orthopedic injuries. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:438-457.e2. [Context Link 1, 2]
30. Expert Panel on Vascular Imaging:, et al. ACR Appropriateness Criteria® suspected thoracic aortic aneurysm. Journal of the American College of Radiology 2018;15(5S):S208-S214. DOI: 10.1016/j.jacr.2018.03.031. [Context Link 1] View abstract...
31. Kallianos KG, Burris NS. Imaging thoracic aortic aneurysm. Radiologic Clinics of North America 2020;58(4):721-731. DOI: 10.1016/j.rcl.2020.02.009. [Context Link 1] View abstract...
32. Upchurch GR, et al. Society for Vascular Surgery clinical practice guidelines for thoracic endovascular aneurysm repair (TEVAR). Journal of Vascular Surgery 2021;73(1S):55S-83S. DOI: 10.1016/j.jvs.2020.05.076. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...
33. Li J, et al. Below-the-knee endovascular revascularization: a position statement. JACC. Cardiovascular Interventions 2024;17(5):589-607. DOI: 10.1016/j.jcin.2023.11.040. [Context Link 1] View abstract...
34. Alonso-Coello P, et al. Antithrombotic therapy in peripheral artery disease: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest 2012;141(2 Suppl):e669S-e690S. DOI: 10.1378/chest.11-2307. (Reaffirmed 2025 Jun) [Context Link 1, 2] View abstract...
35. Hess CN, Hiatt WR. Antithrombotic therapy for peripheral artery disease in 2018. Journal of the American Medical Association 2018;319(22):2329-2330. DOI: 10.1001/jama.2018.5422. [Context Link 1] View abstract...
36. Jones WS, et al. Treatment Strategies for Patients With Peripheral Artery Disease. Comparative Effectiveness Review #118 AHRQ Publication No. 13-EHC090-EF [Internet] Agency for Healthcare Research and Quality (AHRQ). 2013 May Accessed at: https://www.effectivehealthcare.ahrq.gov/. [accessed 2025 Sep 03] [Context Link 1] View abstract...
37. Smolderen KG, et al. Understanding the pain experience and treatment considerations along the spectrum of peripheral artery disease: a scientific statement from the American Heart Association. Circulation. Cardiovascular Quality and Outcomes 2025;e000135. DOI: 10.1161/HCQ.0000000000000135. [Context Link 1, 2] View abstract...
38. Beckman JA. Diseases of the aorta. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:436-444. [Context Link 1]
39. Monitoring for Abdominal Aortic Aneurysm Expansion and Risk of Rupture: in Abdominal Aortic Aneurysm: Diagnosis and Management. NICE Guideline NG156. Evidence Review D [Internet] National Institute for Health and Care Excellence. 2020 Mar Accessed at: https://www.nice.org.uk/guidance/. [accessed 2024 Sep 27] [Context Link 1] View abstract...

40. Fleischmann D, et al. Imaging and surveillance of chronic aortic dissection: a scientific statement from the American Heart Association. Circulation. Cardiovascular Imaging 2022;15(3):e000075. DOI: 10.1161/HCI.0000000000000075. [Context Link 1] View abstract...
41. Pereira BM, et al. WSES position paper on vascular emergency surgery. World Journal of Emergency Surgery 2015;10:49. DOI: 10.1186/s13017-015-0037-2. [Context Link 1] View abstract...
42. 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. [Context Link 1]
43. Ramgopal S, Sepanski RJ, Martin-Gill C. Empirically derived age-based vital signs for children in the out-of-hospital setting. Annals of Emergency Medicine 2023;81(4):402-412. DOI: 10.1016/j.annemergmed.2022.09.019. [Context Link 1] View abstract...
44. Creager MA, Loscalzo J. Arterial diseases of the extremities. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:2107-2115. [Context Link 1]
45. Raja AS. Peripheral vascular trauma. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:429-437.e2. [Context Link 1]
46. Simon BC, Hern HG. Wound management principles. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:651-665.e2. [Context Link 1]
47. Osborn PM, Schmidt AH. Diagnosis and management of acute compartment syndrome. Journal of the American Academy of Orthopedic Surgeons 2021;29(5):183-188. DOI: 10.5435/JAAOS-D-19-00858. [Context Link 1] View abstract...
48. Hooper DC, Shenoy ES, Elshaboury RH. Treatment and prophylaxis of bacterial infections. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:1148-1163. [Context Link 1]
49. Blum FC, Biros MH. Fever in the adult patient. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:90-95.e1. [Context Link 1]
50. Mick NW. Pediatric fever. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:2067-2077.e2. [Context Link 1]
51. Melia MT. Approach to fever or suspected infection in the normal host. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1845-1851. [Context Link 1]
52. Sifri CD. Approach to fever and suspected infection in the immunocompromised host. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1851-1862. [Context Link 1]
53. Singh M, Fernandez-Frackelton M. Bacteria. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:1586-1609.e3. [Context Link 1]
54. Swarm RA, et al. Adult Cancer Pain. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 21 Accessed at: https://www.nccn.org/. [accessed 2025 Jun 04] [Context Link 1]
55. Cohen SP. Pain. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:133-141.e1. [Context Link 1]
56. Peterson SJB, Weisman SJ. Pediatric pain management. In: Kliegman RM, et al., editors. Nelson Textbook of Pediatrics. 22nd ed. Elsevier; 2025:677-700. [Context Link 1]
57. Berger MJ, et al. Antiemesis. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 12 Accessed at: https://www.nccn.org/. [accessed 2025 May 19] [Context Link 1]
58. Fourth consensus guidelines for the management of postoperative nausea and vomiting: erratum. Anesthesia and Analgesia 2020;131(5):e241. DOI: 10.1213/ANE.0000000000005245. [Context Link 1] View abstract...
59. Hoffer LJ, Bistrian BR, Driscoll DF. Enteral and parenteral nutrition. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:2539-2546. [Context Link 1]
60. Centers for Medicare and Medicaid Services. "Hospital services excluded from payment under the hospital outpatient prospective payment system." 42 CFR 419.22 Washington, DC 2023 Jul [accessed 2025 Jul 22] Accessed at: https://www.ecfr.gov/. [Context Link 1]
61. Centers for Medicare and Medicaid Services. "Requirements relating to basic benefits." 42 CFR 422.101 Washington, DC 2025 Jun 03 [accessed 2025 Jul 23] Accessed at: https://www.ecfr.gov/. [Context Link 1]

62. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 1 - Inpatient Hospital Services Covered Under Part A Rev. 10892 [Internet] Centers for Medicare and Medicaid Services. 2021 Aug Accessed at: https://www.cms.gov/manuals/. [accessed 2025 Sep 09] [Context Link 1]
63. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 6 - Hospital Services Covered Under Part B Rev. 12425 [Internet] Centers for Medicare and Medicaid Services. 2023 Dec Accessed at: http://www.cms.gov/manuals/. [accessed 2025 Sep 09] [Context Link 1]
64. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 15 - Covered Medical and Other Health Services Rev. 13108 [Internet] Centers for Medicare and Medicaid Services. 2025 Apr 11 Accessed at: https://www.cms.gov/manuals/. [accessed 2025 Sep 09] [Context Link 1]
65. Centers for Medicare and Medicaid Services. Medicare Program Integrity Manual. Chapter 6, Section 6.5 - Medical Review of Inpatient Hospital Claims for Part A Payment Rev. 10365 [Internet] Centers for Medicare and Medicaid Services. 2020 Oct 02 Accessed at: https://www.cms.gov/medicare/regulations-guidance/manuals/internet-only-manuals-ioms. [accessed 2025 Sep 09] [Context Link 1]
66. Medicare Coverage Database. [Internet] Centers for Medicare and Medicaid Services. Accessed at: https://www.cms.gov/medicare-coverage-database/search.aspx? Updated 2025 [accessed 2025 Oct 23] [Context Link 1]

Footnotes

[A] Acute limb injury (ALI) is defined as an acute (less than 14 days) severe hypoperfusion of the limb characterized by signs and symptoms of poikilothermia (cold), pain, pallor, and pulselessness.(1) ALI is categorized by findings on arterial and venous Doppler: category I (viable) has audible arterial and venous signals, category II (threatened) has inaudible arterial and audible venous signals with variable sensory loss and muscle weakness, and category III (irreversible) has inaudible arterial and venous signals with complete motor and sensory loss.(1) Salvageable limbs (category I or II) may be treated with either endovascular or surgical revascularization.(1) A specialty society guideline recommends that patients with category III irreversible ischemia should undergo amputation of nonviable tissue instead of a revascularization procedure because the procedural risks of revascularization outweigh any potential benefit and because reperfusion of irreversibly ischemic tissues can result in multiorgan failure and shock due to circulation of ischemic metabolites.(1) [A in Context Link 1]

[B] Thrombotic storm, or "catastrophic thrombosis," is characterized by multiple, rapidly occurring thromboembolic events in different blood vessels. Conditions associated with thrombotic storm include (but are not limited to) catastrophic antiphospholipid antibody syndrome, cancer-associated thrombosis, heparin-induced thrombocytopenia, hypereosinophilic syndrome, HELLP (hemolysis, elevated liver enzyme, low platelet) syndrome in pregnancy, hereditary thrombophilias, vaccine-induced immune thrombotic thrombocytopenia, and hemolytic uremic syndrome.(10) [B in Context Link 1]

[C] Chronic limb-threatening ischemia (also known as critical limb ischemia) is defined as a condition characterized by chronic (2 weeks or longer) ischemic rest pain, nonhealing wound/ulcer, or gangrene in one or both legs attributable to objectively proven arterial occlusive disease.(1)(3)(5)(6) The term "chronic limb-threatening ischemia" is preferred over "critical limb ischemia" as it includes a broader spectrum of patients with chronic atherosclerotic disease who are at risk for limb-threatening ischemia and excludes nonatherosclerotic conditions (eg, embolism, trauma, neoplasm, vasculitis).(6) [C in Context Link 1]

[D] Very few patients with atrial fibrillation or atrial flutter (same criteria for anticoagulation apply) require inpatient care or need to have their inpatient stay extended due to a need to achieve immediate therapeutic anticoagulation (ie, stay in the hospital to receive IV unfractionated heparin until warfarin-induced anticoagulation is sufficient). Most patients, including those with clear indications for long-term anticoagulation, do not need immediate anticoagulation, as the risk of an embolic event within the few days until their warfarin becomes therapeutic is very low (a small fraction of 1% per day).(17) Only patients deemed to be at particular risk for embolization (eg, mechanical valve, recent stroke or transient ischemic attack) are candidates for bridge therapy.(17) In addition, the vast majority of patients are eligible to be anticoagulated through use of an oral direct thrombin inhibitor (eg, dabigatran), an oral coagulation factor Xa inhibitor (eg, rivaroxaban, apixaban, edoxaban), or low-molecular-weight heparin, all of which achieve full anticoagulation rapidly (eg, a few hours after the first dose).(17) [D in Context Link 1, 2]

[E] Specialty society guidelines, expert panels, and systematic reviews recommend nonoperative medical therapy for uncomplicated descending thoracic aorta (type B) dissection.(19)(20)(21) [E in Context Link 1]

[F] See Intensive, Intermediate, and Telemetry Care Guidelines ISC. [F in Context Link 1]

[G] See Clinical Indications for Admission to Inpatient Care in this guideline. [G in Context Link 1]

Definitions

Activity level acceptable

- Activity level acceptable, as indicated by **1 or more** of the following:
  - Patient ambulatory and can perform ADL as appropriate for age and development
  - Activity at baseline
  - Activity level acceptable for next level of care

Bacteremia

- Bacteremia refers to blood culture isolation of a bacterial species that is likely to be pathologic and not a contaminant.(1)(2)

References

1. Lowy FD. Staphylococcal infections. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:1178-1188.
2. Rice LB. Principles of anti-infective therapy. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1840-1845.

General Discharge Criteria met

- General Discharge Criteria met or Pediatric General Discharge Criteria met (if either is relevant or necessary for patient's condition)

Hemodynamic stability

- Hemodynamic stability, as indicated by **1 or more** of the following:
  - Hemodynamic abnormalities at baseline or acceptable for next level of care
  - Patient hemodynamically stable, as indicated by **ALL** of the following(1)(2):
    - Tachycardia absent
    - Hypotension absent
    - No evidence of inadequate perfusion (eg, no myocardial ischemia)
    - No other hemodynamic abnormalities (eg, no Orthostatic hypotension)

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. Ramgopal S, Sepanski RJ, Martin-Gill C. Empirically derived age-based vital signs for children in the out-of-hospital setting. Annals of Emergency Medicine 2023;81(4):402-412. DOI: 10.1016/j.annemergmed.2022.09.019.

Hypotension absent

- Hypotension absent,[A] as indicated by **1 or more** of the following:
  - Hypotension absent in adult patient, as indicated by **1 or more** of the following:

- Systolic blood pressure greater than or equal to 90 mm Hg[A](1)
- Mean arterial pressure[B] greater than or equal to 70 mm Hg MAP Calculator[A](1)(2)
- Blood pressure at patient's baseline (eg, healthy adult with low systolic blood pressure), at intentional therapeutic goal (eg, patient with heart failure), or acceptable for next level of care (eg, blood pressure stable and no significant signs or symptoms due to low blood pressure)

- Hypotension absent in pediatric patient, as indicated by **1 or more** of the following:
  - Systolic blood pressure greater than or equal to 110 mm Hg in child 13 to 17 years of age[A](3)
  - Systolic blood pressure greater than or equal to 100 mm Hg in child 6 to 12 years of age[A](3)
  - Systolic blood pressure greater than or equal to 95 mm Hg in child 3 to 5 years of age[A](3)
  - Systolic blood pressure greater than or equal to 90 mm Hg in child 1 or 2 years of age[A](3)
  - Systolic blood pressure greater than or equal to 80 mm Hg in infant 6 to 11 months of age[A](3)
  - Systolic blood pressure greater than or equal to 70 mm Hg in infant 3 to 5 months of age[A](3)
  - Systolic blood pressure greater than or equal to 65 mm Hg in infant 1 or 2 months of age[A](3)
  - Blood pressure at patient's baseline (eg, healthy child with low systolic blood pressure), at intentional therapeutic goal, or acceptable for next level of care (eg, blood pressure stable and no significant signs or symptoms due to low blood pressure)

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. Puskarich MA, Jones AE. Shock. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:34-41.e1.
3. 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. The mean arterial pressure (MAP) takes into account both SBP and DBP readings.

Inpatient anticoagulation needed

- Contraindication to outpatient use of medication with rapid anticoagulation effect (eg, IV unfractionated heparin and warfarin indicated),[A] as indicated by **ALL** of the following(1)(2)(4)(5):
  - Contraindication to use of low-molecular-weight heparin, as indicated by **1 or more** of the following:
    - Current or history of heparin-induced thrombocytopenia
    - Severe thrombocytopenia (eg, platelet count less than 50,000/mm^3 (50 $x10^9$/L))
    - Allergy to heparin, low-molecular-weight heparin, or product components
    - Need for neuraxial anesthesia or spinal puncture anticipated
    - Inability to manage self-injection (eg, by patient, caregiver, or visiting nurse)
  - Contraindication to use of fondaparinux, as indicated by **1 or more** of the following:
    - Severe thrombocytopenia (eg, platelet count less than 50,000/mm^3 (50 $x10^9$/L))

- Allergy to fondaparinux, related drugs, or product components
- Renal failure (creatinine clearance less than 30 mL/min/1.73m^2 (0.50 mL/sec/1.73m^2) or on dialysis) eGFR - Adult Calculator eGFR - Pediatric Calculator
- Pregnancy(4)
- Severe liver disease (eg, Child-Pugh class C or coagulopathy (eg, elevated INR) due to liver disease)
- Mechanical heart valve
- Need for neuraxial anesthesia or spinal puncture anticipated
- Inability to manage self-injection (eg, by patient, caregiver, or visiting nurse)
- BMI greater than or equal to 50[B]

- Contraindication to use of oral direct thrombin inhibitor (eg, dabigatran) or oral factor Xa inhibitor (eg, apixaban, edoxaban, rivaroxaban), as indicated by **1 or more** of the following[C][D](11):
  - Severe thrombocytopenia (eg, platelet count less than 50,000/mm^3 (50 x10^9/L))
  - Allergy to medication or product components
  - Pregnancy or breast-feeding[D](4)(11)
  - Severe liver disease (eg, Child-Pugh class C or coagulopathy (eg, elevated INR) due to liver disease)(12)
  - Renal failure (creatinine clearance less than 15 mL/min/1.73m^2 (0.25 mL/sec/1.73m^2) or on dialysis)[D](11) eGFR - Adult Calculator eGFR - Pediatric Calculator
  - Mechanical heart valve[D](11)(13)
  - Atrial fibrillation with rheumatic mitral stenosis[D](11)
  - Thrombotic antiphospholipid syndrome[D](11)
  - Left ventricular thrombus[D](11)
  - Catheter-associated deep venous thrombosis[D](11)
  - Cerebral venous sinus thrombosis[D](11)
  - Need for neuraxial anesthesia or spinal puncture anticipated
  - BMI greater than or equal to 50[B]

References

1. Stevens SM, et al. Antithrombotic therapy for VTE disease: second update of the CHEST guideline and expert panel report. Chest 2021;160(6):e545-e608. DOI: 10.1016/j.chest.2021.07.055. (Reaffirmed 2025 Jan)
2. Lip GYH, et al. Antithrombotic therapy for atrial fibrillation: CHEST guideline and expert panel report. Chest 2018;154(5):1121-1201. DOI: 10.1016/j.chest.2018.07.040. (Reaffirmed 2025 Jul)
3. Di Nisio M, van Es N, Buller HR. Deep vein thrombosis and pulmonary embolism. Lancet 2017;388(10063):3060-3073. DOI: 10.1016/S0140-6736(16)30514-1.
4. Thromboembolism in pregnancy. ACOG Practice Bulletin No. 196. Obstetrics & Gynecology 2018 (ACOG reaffirmed 2025);132(1):e1-e17. DOI: 10.1097/AOG.0000000000002706. (Reaffirmed 2025 Jul)
5. Joglar JA, et al. 2023 ACC/AHA/ACCP/HRS Guideline for the diagnosis and management of atrial fibrillation: a report of the American College of Cardiology/American Heart Association joint committee on clinical practice guidelines. Journal of the American College of Cardiology 2024;149(1):Online. DOI: 10.1016/j.jacc.2023.08.017. (Reaffirmed 2025 Mar)
6. Dobry P, et al. Treatment of atrial fibrillation and venous thromboembolism with factor Xa inhibitors in severely obese patients. Journal of Thrombosis and Haemostasis 2024;22(12):3500-3509. DOI: 10.1016/j.jtha.2024.08.009.
7. Martin KA, Beyer-Westendorf J, Davidson BL, Huisman MV, Sandset PM, Moll S. Use of direct oral anticoagulants in patients with obesity for treatment and prevention of venous thromboembolism: Updated communication from the ISTH SSC Subcommittee on Control of Anticoagulation. Journal of Thrombosis and

Haemostasis 2021;19(8):1874-1882. DOI: 10.1111/jth.15358.
8. Rosovsky RP, et al. Direct Oral Anticoagulants in Obese Patients with Venous Thromboembolism: Results of an Expert Consensus Panel. American Journal of Medicine 2023;136(6):523-533. DOI: 10.1016/j.amjmed.2023.01.010.
9. Ellenbogen MI, Ardeshirrouhanifard S, Segal JB, Streiff MB, Deitelzweig SB, Brotman DJ. Safety and effectiveness of apixaban versus warfarin for acute venous thromboembolism in patients with end-stage kidney disease: A national cohort study. Journal of Hospital Medicine 2022;17(10):809-818. DOI: 10.1002/jhm.12926.
10. Wetmore JB, Herzog CA, Yan H, Reyes JL, Weinhandl ED, Roetker NS. Apixaban versus warfarin for treatment of venous thromboembolism in patients receiving long-term dialysis. Clinical Journal of the American Society of Nephrology 2022;17(5):693-702. DOI: 10.2215/CJN.14021021.
11. Bejjani A, et al. When direct oral anticoagulants should not be standard treatment: JACC state-of-the-art review. Journal of the American College of Cardiology 2024;83(3):444-465. DOI: 10.1016/j.jacc.2023.10.038.
12. Carlin S, et al. Anticoagulation for stroke prevention in atrial fibrillation and treatment of venous thromboembolism and portal vein thrombosis in cirrhosis: guidance from the SSC of the ISTH. Journal of Thrombosis and Haemostasis 2024;22(9):2653-2669. DOI: 10.1016/j.jtha.2024.05.023.
13. Ryu R, Tran R. DOACs in mechanical and bioprosthetic heart valves: a narrative review of emerging data and future directions. Clinical and Applied Thrombosis/Hemostasis 2022;28:Online. DOI: 10.1177/10760296221103578.

Footnotes

A. Patients using low-molecular-weight heparin, fondaparinux, an oral direct thrombin inhibitor, or an oral factor Xa inhibitor achieve full anticoagulation rapidly (eg, a few hours after first dose).(1)(2)(3)
B. The clinical utility of factor Xa inhibitors or direct thrombin inhibitors in patients with a BMI greater than or equal to 50 is unclear, due to a relative paucity of data in these patients.(6)(7)(8) While some do advocate the use of factor Xa inhibitors or direct thrombin inhibitors in this patient group, others suggest that absent clear evidence of efficacy, it is preferable to use heparin (low-molecular-weight or unfractionated) transitioning to warfarin because of the long established ability to carefully adjust dosage based on measurement of anticoagulant effect (eg, via measurement of anti-factor Xa level, prothrombin/INR).(6)(7)(8)
C. With caution and dose adjustment, apixaban can be administered to patients with stage 5 renal failure (creatinine clearance less than 15 mL/min/1.73m^2 (0.25 mL/sec/1.73m^2)) or who are receiving hemodialysis.(5)(9)(10) Rivaroxaban and edoxaban are not recommended for patients with stage 5 or hemodialysis-dependent renal failure.
D. A systematic review of relevant randomized controlled trials concludes that direct oral anticoagulants (ie, oral factor Xa and oral thrombin inhibitors) should not be standard treatment for patients with mechanical heart valves, atrial fibrillation with rheumatic mitral stenosis, or thrombotic antiphospholipid syndrome.(11) For these indications, use of a vitamin K antagonist (eg, warfarin) is preferred.(11) The review further concludes that the efficacy and safety of direct oral anticoagulants is uncertain in patients with left ventricular thrombus, catheter-associated deep venous thrombosis, or cerebral venous sinus thrombosis.(11) Concerning patients with end-stage renal disease, the review states that the choice of an anticoagulant should be individualized due to the lack of definitive data, balancing the pros and cons of a direct oral anticoagulant and vitamin K antagonist-based anticoagulation.(11) Patients who are pregnant or breast-feeding should avoid direct oral anticoagulants pending further study concerning safety.(11)

Intake acceptable

- Intake acceptable, as indicated by **1 or more** of the following(1):
  - Oral hydration, medications, and diet
  - Enteral hydration, medications, and diet
  - Administration routes performable at next level of care

References

1. Hoffer LJ, Bistrian BR, Driscoll DF. Enteral and parenteral nutrition. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:2539-2546.

Multimodal analgesia

- Multimodal analgesia involves the utilization of 2 or more analgesic agents with different mechanisms of action in order to provide additive or synergistic pain control, while minimizing side effects and reliance on opioids.(1)(2)(3)

References

1. D'Souza RS, Johnson RL. Regional and multimodal treatments of perioperative pain. In: Benzon H, editor. Practical Management of Pain. 6th ed. Philadelphia, PA 19103-2899: Elsevier; 2023:355-373.e8.
2. George S, Johns M. Review of nonopioid multimodal analgesia for surgical and trauma patients. American Journal of Health-System Pharmacy 2020;77(24):2052-2063. DOI: 10.1093/ajhp/zxaa301.
3. Finnerup NB. Nonnarcotic methods of pain management. New England Journal of Medicine 2019;380(25):2440-2448. DOI: 10.1056/NEJMra1807061.

No infection, or status acceptable

- No infection, or status acceptable, as indicated by **1 or more** of the following(1)(2)(3)(4)(5):
  - No infection present
  - Infection status acceptable for next level of care, as indicated by **ALL** of the following(6):
    - WBC count normal, stable, or declining with treatment
    - Adequate treatment performable at next level of care
    - Organism and sensitivities identified, or adequate clinical response to empiric therapy
    - Repeat cultures negative or not needed

References

1. Hooper DC, Shenoy ES, Elshaboury RH. Treatment and prophylaxis of bacterial infections. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:1148-1163.
2. Blum FC, Biros MH. Fever in the adult patient. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:90-95.e1.
3. Mick NW. Pediatric fever. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:2067-2077.e2.
4. Melia MT. Approach to fever or suspected infection in the normal host. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1845-1851.
5. Sifri CD. Approach to fever and suspected infection in the immunocompromised host. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1851-1862.
6. Singh M, Fernandez-Frackelton M. Bacteria. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:1586-1609.e3.

No inpatient interventions needed

- No inpatient interventions needed; examples include:
  - Vital signs, neurologic signs, or vascular checks more often than feasible at next level of care

- Cardiac or respiratory monitoring
- IV fluid to replace significant ongoing losses
- Urgent debridement or skin grafting planned
- IV anticoagulation, vasodilators, or platelet inhibitors
- Emergent catheterization, angioplasty, or surgery
- Hemodialysis in unstable patient

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.

Pain and nausea absent or adequately managed

- Pain and nausea absent or adequately managed, as indicated by **1 or more** of the following(1)(2)(3)(4)(5):
  - No pain or nausea
  - Minimal discomfort on oral medications
  - Pain and nausea managed on regimen performable at next level of care

References

1. Swarm RA, et al. Adult Cancer Pain. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 21 Accessed at: https://www.nccn.org/. [accessed 2025 Jun 04]
2. Cohen SP. Pain. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:133-141.e1.
3. Peterson SJB, Weisman SJ. Pediatric pain management. In: Kliegman RM, et al., editors. Nelson Textbook of Pediatrics. 22nd ed. Elsevier; 2025:677-700.

4. Berger MJ, et al. Antiemesis. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 12 Accessed at: https://www.nccn.org/. [accessed 2025 May 19]
5. Fourth consensus guidelines for the management of postoperative nausea and vomiting: erratum. Anesthesia and Analgesia 2020;131(5):e241. DOI: 10.1213/ANE.0000000000005245.

Patient at high risk for bleeding complications upon initiation of anticoagulation

- Patient at high risk for acute complications (eg, hemorrhage) upon initiation of anticoagulation, as indicated by **1 or more** of the following(1)(2):
  - Gastrointestinal bleeding within preceding 14 days(1)
  - Major surgery (eg, intra-abdominal, intrathoracic, CNS, vascular, orthopedic) within preceding 14 days(1)
  - Stroke (hemorrhagic or ischemic) within preceding 4 weeks(1)
  - Bleeding disorder not readily reversible (eg, coagulopathy from liver disease)(1)(3)
  - Thrombocytopenia (platelet count less than 75,000/mm^3 (75 $x10^9$/L))(1)
  - Uncontrolled hypertension (eg, systolic blood pressure greater than 180 mm Hg or diastolic blood pressure greater than 110 mm Hg)(1)
  - Intracranial or intraspinal tumor(2)
  - Aortic dissection(2)
  - Known increased risk of gastrointestinal bleed (eg, esophageal varices, current ulcer)(3)
  - Personal or family history of significant bleeding or allergic, autoimmune (thrombocytopenia), or coagulopathic reaction in response to anticoagulation
  - Personal or family history of significant bleeding tendency or bleeding disorder(1)
  - Recent or ongoing blood loss (not due to anticoagulation) at time of initiation of anticoagulation (eg, need to anticoagulate despite blood loss)(2)
  - Other risk factor thought to place patient at high risk such that ability to rapidly reverse anticoagulation is necessary (eg, discontinue parenteral unfractionated heparin, use of reversal agent)

References

1. American College of Emergency Physicians Clinical Policies Subcommittee (Writing Committee) on Throm, et al. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected acute venous thromboembolic disease. Annals of Emergency Medicine 2018;71(5):e59-e109. DOI: 10.1016/j.annemergmed.2018.03.006. (Reaffirmed 2025 Jun)
2. Davidson BL, Elliott CG. Pulmonary thromboembolism: prophylaxis and treatment. In: Broaddus VC, et al., editors. Murray & Nadel's Textbook of Respiratory Medicine. 7th ed. Elsevier Saunders; 2022:1123-1140.e5.
3. Sasso R, Rockey DC. Anticoagulation therapy in patients with liver cirrhosis is associated with an increased risk of variceal hemorrhage. American Journal of Medicine 2019;132(6):758-766. DOI: 10.1016/j.amjmed.2019.01.006.

Social Determinants of Health Assessment

- Risk of poor health outcomes may be increased by the presence of **1 or more** of the following social determinants of health(1)(2)(3):
  - Housing insecurity, as indicated by **1 or more** of the following:
    - Individual or caregiver's current living situation is **1 or more** of the following(4):
      - Does not have own housing (eg, staying in a hotel, shelter, or with others)
      - Has own housing (eg, house, apartment), but at risk of losing it in the future (ie, behind on rent or mortgage)
      - Has own housing (eg, house, apartment), but has lived in 3 or more places in past year
    - Current housing has **1 or more** of the following:
      - Electrical appliances (eg, stove, refrigerator) not working or unavailable

        - Insufficient heating or cooling
        - Insufficient ventilation
        - Lead paint or pipes
        - Mold
        - Pests (eg, bugs) or rodents
        - Smoke detectors not working or unavailable
    - Food insecurity, as indicated by **1 or more** of the following(5):
        - In the past year, individual or caregiver ran out of food and did not have money to buy more food.
        - In the past year, individual or caregiver worried that they would run out of food before they received money to buy more food.
    - Insufficient transportation, as indicated by **1 or more** of the following(6):
        - In the past year, individual or caregiver missed medical appointments or could not get medications due to lack of transportation.
        - In the past year, individual or caregiver missed nonmedical activities, work, or could not get things needed for daily living due to lack of transportation.
    - Insufficient utilities, as indicated by **1 or more** of the following(7):
        - Utilities (eg, electricity, water, gas, or oil) are currently shut off or unavailable.
        - In the past year, electric, water, gas, or oil company threatened to shut off services.
    - Personal safety risk, as indicated by **2 or more** of the following(5):
        - Individual is sometimes or frequently physically hurt by another person (including family member).
        - Individual is sometimes or frequently insulted or talked down to by another person (including family member).
        - Individual is sometimes or frequently threatened with physical harm by another person (including family member).
        - Individual is sometimes or frequently screamed or cursed at by another person (including family member).
    - Insufficient dependent care, as indicated by **1 or more** of the following:
        - In the past year, individual or caregiver was unable to work due to lack of dependent care.
        - In the past year, individual or caregiver was unable to work more (additional) hours due to lack of dependent care.
        - In the past year, individual or caregiver missed medical appointments or could not get medications due to lack of dependent care.
        - In the past year, individual or caregiver missed nonmedical activities (eg, school, church, social activity) due to lack of dependent care.
    - Depression risk, as indicated by **ALL** of the following(8):
        - In the past 2 weeks, individual had little interest or pleasure in normal activities on at least several days.
        - In the past 2 weeks, individual felt down, depressed, or hopeless on at least several days.

References

1. Scanlon A, Reinisch C. Social determinants of health. In: Harding MM, Kwong J, Hagler D, Reinisch C, editors. Lewis's Medical-Surgical Nursing: Assessment and Management of Clinical Problems. 12th ed. St. Louis, MO: Mosby; 2023:18-20.
2. Billioux A, Verlander K, Anthony S, Alley D. Standardized Screening for Health-Related Social Needs in Clinical Settings: the Accountable Health Communities Screening Tool. [Internet] National Academy of Sciences. 2017 May Accessed at: https://nam.edu/. [accessed 2025 Sep 12]
3. Addressing social determinants of health. In: Perez R, editor. CMSA's Integrated Case Management. 2nd ed. Springer Publishing Company LLC; 2023:62-75.
4. Sandel M, et al. Unstable housing and caregiver and child health in renter families. Pediatrics 2018;14(2):e20172199. DOI: 10.1542/peds.2017-2199.
5. Children's HealthWatch Survey. Screening Instrument [Internet] Children's HealthWatch. 2024 Feb 13 Accessed at: https://childrenshealthwatch.org/. [accessed 2025 Mar 31]
6. PRAPARE®: Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences Screening Tool. 2.0 [Internet] Association of Asian Pacific Community Health Organizations (AAPCHO) and National Association of Community Health Centers (NACHC). 2025 Accessed at: https://prapare.org/the-prapare-screening-tool/. [accessed 2025 Sep 08]
7. Cook JT, et al. A brief indicator of household energy security: associations with food security, child health, and child development in US infants and toddlers. Pediatrics 2008;122(4):e867-75. DOI: 10.1542/peds.2008-0286.

8. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: validity of a two-item depression screener. Medical Care 2003;41(11):1284-92. DOI: 10.1097/01.MLR.0000093487.78664.3C.

Tachycardia absent

- Tachycardia[A][B] absent, as indicated by **1 or more** of the following:
  - Heart rate less than or equal to 100 beats per minute in adult[A][B](1)
  - Heart rate less than or equal to 85 beats per minute in child 13 to 17 years of age[A][B](2)
  - Heart rate less than or equal to 95 beats per minute in child 6 to 12 years of age[A][B](2)
  - Heart rate less than or equal to 110 beats per minute in child 1 to 5 years of age[A][B](2)
  - Heart rate less than or equal to 120 beats per minute in infant 3 to 11 months of age[A][B](2)
  - Heart rate less than or equal to 150 beats per minute in infant 1 or 2 months of age[A][B](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.

Temporary subtherapeutic anticoagulation unacceptable

- Temporary subtherapeutic anticoagulation unacceptable because of high short-term risk of venous or arterial thromboembolism due to **1 or more** of the following[A][B](1)(3)(4):
  - Venous thromboembolism or left ventricular thrombus within past 3 months(4)
  - Underlying malignancy[C](4)
  - Patient with mechanical cardiac valve[D](1)(3)
  - Underlying hypercoagulable state (eg, protein C or protein S deficiency, antithrombin deficiency, antiphospholipid antibodies, severe thrombophilia)(4)
  - Patient at temporary high risk of thromboembolism (eg, status post orthopedic surgery)(4)
  - Atrial fibrillation and **1 or more** of the following[A]:

- Recent stroke or transient ischemic attack (eg, within past 3 months) or prior perioperative stroke(1)(4)
- Rheumatic valvular heart disease(3)(4)
- CHA2DS2-VASc score of 7 or greater or CHADS2 score of 5 or greater[E](3)(4)

References

1. Joglar JA, et al. 2023 ACC/AHA/ACCP/HRS Guideline for the diagnosis and management of atrial fibrillation: a report of the American College of Cardiology/American Heart Association joint committee on clinical practice guidelines. Journal of the American College of Cardiology 2024;149(1):Online. DOI: 10.1016/j.jacc.2023.08.017. (Reaffirmed 2025 Mar)
2. Bejjani A, et al. When direct oral anticoagulants should not be standard treatment: JACC state-of-the-art review. Journal of the American College of Cardiology 2024;83(3):444-465. DOI: 10.1016/j.jacc.2023.10.038.
3. Douketis JD, et al. Perioperative management of antithrombotic therapy: an American College of Chest Physicians Clinical Practice Guideline. Chest 2022;162(5):e207-e243. DOI: 10.1016/j.chest.2022.07.025. (Reaffirmed 2025 Jul)
4. Thompson A, et al. 2024 AHA/ACC/ACS/ASNC/HRS/SCA/SCCT/SCMR/SVM guideline for perioperative cardiovascular management for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation 2024;Online. DOI: 10.1161/CIR.0000000000001285. (Reaffirmed 2025 Mar)

Footnotes

A. Very few patients with atrial fibrillation or atrial flutter (same criteria for anticoagulation apply) require inpatient care or need to have their inpatient stay extended due to a need to achieve immediate therapeutic anticoagulation (ie, stay in the hospital to receive IV unfractionated heparin until warfarin-induced anticoagulation is sufficient). Most patients, including those with clear indications for long-term anticoagulation, do not need immediate anticoagulation, as the risk of an embolic event within the few days until their warfarin becomes therapeutic is very low (a small fraction of 1% per day).(1) Only patients deemed to be at particular risk for embolization (eg, mechanical valve, recent stroke or transient ischemic attack) are candidates for bridge therapy.(1) In addition, the vast majority of patients are eligible to be anticoagulated through use of an oral direct thrombin inhibitor (eg, dabigatran), an oral coagulation factor Xa inhibitor (eg, rivaroxaban, apixaban, edoxaban), or low-molecular-weight heparin, all of which achieve full anticoagulation rapidly (eg, a few hours after the first dose).(1)

B. A systematic review of relevant randomized controlled trials concludes that direct oral anticoagulants (ie, oral factor Xa inhibitors and oral thrombin inhibitors) should not be standard treatment for patients with mechanical heart valves, atrial fibrillation with rheumatic mitral stenosis, or thrombotic antiphospholipid syndrome.(2) For these indications, the use of a vitamin K antagonist (eg, warfarin) is preferred.(2) The review further concludes that the efficacy and safety of direct oral anticoagulants are uncertain in patients with left ventricular thrombus, catheter-associated deep venous thrombosis, or cerebral venous sinus thrombosis.(2) Concerning patients with end-stage renal disease, the review states that the choice of an anticoagulant should be individualized due to the lack of definitive data, balancing the pros and cons of direct oral anticoagulant-based and vitamin K antagonist-based anticoagulation.(2) Patients who are pregnant or breast-feeding should avoid direct oral anticoagulants pending further study concerning safety.(2)

C. A specialty society guideline identifies pancreatic cancer, myeloproliferative disorders, primary brain cancer, gastric cancer, and esophageal cancer as being especially high risk and states that patients with other malignancies may not be at high short-term risk of thromboembolism.(3)

D. A specialty society guideline concludes that patients with atrial fibrillation and a mechanical cardiac valve are at high short-term risk of arterial thromboembolism.(1) Another specialty society guideline identifies the following features in patients with mechanical heart valves that confer high thrombotic risk: patients with a mitral valve and major risk factors for stroke, patients with mitral or aortic caged ball or tilting-disc valves, and patients with mechanical valves and recent stroke or transient ischemic attack.(3)

E. Online calculators for the CHA2DS2-VASc score and the CHADS2 score are available at www.mdcalc.com/calc/801/cha2ds2-vasc-score-atrial-fibrillation-stroke-risk and www.mdcalc.com/calc/40/chads2-score-atrial-fibrillation-stroke-risk, respectively.

Vascular, soft tissue, and wound status acceptable

- Vascular, soft tissue, and wound status acceptable, as indicated by **1 or more** of the following(1)(2)(3)(4):
  - No vascular, soft tissue, or wound problems
  - Status acceptable, as indicated by **ALL** of the following:
    - No significant ischemia
    - No Bacteremia
    - No evidence of compartment syndrome
    - Neuromotor function at baseline or expected level of recovery and appropriate for management at next level of care
    - No new wound dehiscence or hematoma that cannot be managed at next level of care
    - Tissue necrosis absent, or treatment plan appropriate for next level of care
    - Vascular, soft tissue, and wound management appropriate for next level of care

References

1. Creager MA, Loscalzo J. Arterial diseases of the extremities. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:2107-2115.
2. Raja AS. Peripheral vascular trauma. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:429-437.e2.
3. Simon BC, Hern HG. Wound management principles. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:651-665.e2.
4. Osborn PM, Schmidt AH. Diagnosis and management of acute compartment syndrome. Journal of the American Academy of Orthopedic Surgeons 2021;29(5):183-188. DOI: 10.5435/JAAOS-D-19-00858.

Last Update: 1/25/2026 12:52:12 AM
Build Number: 30.0.2026012500524.025256