

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
 - Supplemental Medicare Criteria
 - Alternatives to Admission
- Hospitalization
 - General Recovery Course
 - Benchmark Length of Stay - **Access diagnosis and procedure code-specific BLOS via Search functions.**
 - Discharge Criteria
- Case Management
- Discharge Destination
- Evidence Summary
 - Criteria
 - Rationale
 - Related CMS Coverage Guidance
- References
- Footnotes
- Definitions

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.

- o Recovery facility care. See Medical Admission Recovery Facility Care GRG [↗](#) RFC or Geriatric Admission Recovery Facility Care GRG [↗](#) RFC for further information.
- o 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)

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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

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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

- 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.
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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

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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/mm³ (50 x10⁹/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/mm³ (50 x10⁹/L))

- Allergy to fondaparinux, related drugs, or product components
- Renal failure (creatinine clearance less than 30 mL/min/1.73m² (0.50 mL/sec/1.73m²) 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/mm³ (50 x10⁹/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/1.73m² (0.25 mL/sec/1.73m²) 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]

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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/1.73m² (0.25 mL/sec/1.73m²)) 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

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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

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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

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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

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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

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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/mm³ (75 x10⁹/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

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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.

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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)

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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)}

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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

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MCG Health
General Recovery Care 30th Edition
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Last Update: 1/25/2026 12:52:12 AM
Build Number: 30.0.2026012500524.025256