General Admission Criteria

GRG: CG-GAC (ISC GRG)

MCG Health
General Recovery Care
30th Edition

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

General Admission Criteria

Clinical Indications for Admission to Inpatient Care

- Admission is indicated for **1 or more** of the following(1):
  - Hemodynamic instability
  - Acute peripheral ischemia (eg, pulseless, cool, mottled, or cyanotic extremity)(2)(3)(4)
  - Cardiac arrhythmias of immediate concern
  - Severe respiratory findings
  - Severe airflow or ventilation abnormalities
  - Neurologic abnormalities
  - Altered mental status that is severe or persistent
  - Acute kidney injury (stage 2)
  - Acute renal failure (stage 3 acute kidney injury)
  - Dehydration that is severe or persistent
  - Vomiting that is severe or persistent
  - Physiologic disorder (eg, acute acidosis, thyroid storm, adrenal crisis) that is severe or persists despite observation care(5)(6)(7)
  - Suspicion for or diagnosis of abdominal catastrophe (eg, severe abdominal pain, Peritoneal signs)(8)
  - Temperature less than 95 degrees F (35 degrees C) (rectal)(9)
  - Severe electrolyte abnormalities requiring inpatient care
  - Anemia

- High-risk thrombocytopenia (low platelet count)
- Disseminated intravascular coagulation(10)
- 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, as indicated by **ALL** of the following:
  - Temporary subtherapeutic anticoagulation unacceptable
  - Inpatient anticoagulation needed

- Adverse drug or systemic toxin reaction that is severe or persists despite observation care (eg, serotonin syndrome, neuroleptic malignant syndrome, cholinergic syndrome, anticholinergic syndrome)(11)(12)(13)(14)(15)
- Severe pain requiring acute inpatient management
- Preoperative, postoperative, or nonoperative care of traumatic or other significant injury(16)(17)(18)(19)(20)(21)

− Inpatient monitoring needed; examples include(19)(21)(22)(23)(24)(25)(26)(27):
  - Vital signs, neurologic signs, or vascular checks more frequently than every 4 hours
  - Cardiac or respiratory monitoring beyond scope of observation care(28)
  - Pulmonary artery catheter monitoring
  - Suspected compartment syndrome(29)
  - Cerebral bleeding, hydrocephalus, or vasospasm monitoring
  - Increased intracranial pressure or cerebral edema monitoring
  - Fetal monitoring(30)(31)

− Treatment requiring inpatient care; examples include:
  - IV fluid to replace significant ongoing losses (greater than 3 L/m^2 per day)(32)(33)
  - High-concentration oxygen (greater than 40%)(34)
  - Frequent respiratory therapy (more frequently than every 4 hours) to maintain airflow rates greater than 60% of baseline(28)(34)
  - Epidural analgesia(35)
  - IV anticoagulation, vasoactive medication, or antiarrhythmic medication(2)(3)(4)(36)(37)
  - Acute thrombolytics (generally require 24 hours of observation)(38)(39)
  - Antidote administration(40)

− Emergency procedures needed; examples include:
  - Emergency inpatient surgery. See specific Optimal Recovery Guideline or General Recovery Guideline as appropriate.
  - Temporary pacemaker placement(41)(42)
  - Chest tube placement with active evacuation (eg, suction, drainage)(43)
  - Emergent cardioversion(42)(44)
  - Emergent cardiac or vascular procedures (eg, cardiac catheterization, angioplasty)(2)(3)(45)
  - Emergent dialysis access placement and institution(46)(47)
  - Emergent pericardiocentesis(48)
  - Emergent plasmapheresis or leukapheresis(49)
  - Emergent tracheostomy(1)

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(50):
  - 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.

Evidence Summary

Criteria

The evidence for the clinical indications found in this guideline includes 3 published peer reviewed articles, 13 specialty society or other evidence-based guidelines, and 32 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(50); 42 CFR 419.22(51); 42 CFR 422.101(52)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 1 - Inpatient Hospital Services Covered Under Part A(53); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 6 - Hospital Services Covered Under Part B(54); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(55); CMS IOM Publication 100-08, Medicare Program Integrity Manual, Chapter 6, Section 6.5 - Medical Review of Inpatient Hospital Claims for Part A Payment(56)

Medicare Coverage Determinations: Medicare Coverage Database(57)

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Definitions

Acute kidney injury (stage 2)

- Acute kidney injury (stage 2) with significant clinical findings, as indicated by **ALL** of the following(1)(2)(3):
  - Acute[A] kidney injury (stage 2), as indicated by **1 or more** of the following[B]:

- Acute[A] rise in serum creatinine between 2 and 2.9 times its baseline value[C] (increase of 3 times baseline would qualify as stage 3 acute kidney injury)
- Decreased urine output,[D] as indicated by **ALL** of the following:
  - Assessment of urine output appropriate (eg, adequate volume status, no urinary obstruction)
  - Urine output less than 0.5 mL/kg/hr for 12 hours

- Significant clinical findings, as indicated by **1 or more** of the following[B]:
  - Hemodynamic instability
  - Worsening clinical status despite observation care (eg, rising creatinine or urine output remains less than 0.5 mL/kg/hr)
  - Altered mental status
  - Cardiac arrhythmias of immediate concern
  - Severe hypertension (SBP greater than 180 mm Hg or DBP greater than 120 mm Hg in adults or greater than the 95th percentile for age, gender, and height plus 30 mm Hg in pediatric patients)(4)(5)
  - Significant respiratory findings (eg, pulmonary edema) that are severe (eg, Hypoxemia) or persist despite observation care
  - Clinically significant electrolyte abnormality that is severe (eg, hyperkalemia with severe ECG findings)[E] or persists despite observation care
  - Clinically significant metabolic abnormality (eg, metabolic acidosis) that is severe or persists despite observation care

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Footnotes

A. A specialty society practice guideline defines acute kidney injury as a change in renal function that is known or presumed to have occurred over the previous 7 days.(1)

B. In determining the stage of acute kidney injury (eg, stage 2 vs stage 3), patients should be staged according to the criteria that give them the highest stage.(1)

C. If the baseline serum creatinine is not known, absent known or suspected chronic kidney disease, a baseline serum creatinine can be approximated by assuming an estimated GFR of 75 mL/min/1.73m^2 (1.25 mL/sec/1.73m^2).(1) eGFR - Adult Calculator eGFR - Pediatric Calculator

D. The use of urine output as an indicator of acute kidney injury is important, as change in urine output can occur before a noticeable rise in creatinine.(1)(3) It is also suggested that urine output can identify patients with acute kidney injury that may otherwise be missed.(1)(3) However, urine output as a metric is only valid

under the appropriate conditions. For example, the patient must not be hypovolemic, there must not be urinary obstruction, and the collection and measurement of urinary output must be complete and accurate.(1)(3) Use of urinary output to define acute kidney injury can be inaccurate in obese patients due to the nonlinear relationship between body weight and urine output. For example, in a 100-kg (220-lb) patient, urine output of 45 mL/hr over 12 hours (adequate output) would qualify as stage 2 acute kidney injury.(1)(3)

E. ECG findings include peaked T-waves, PR interval greater than 0.20 seconds, QRS interval greater than 0.12 seconds, and arrhythmia.(6)(7)

Acute renal failure (stage 3 acute kidney injury)

- Acute[A] kidney injury (stage 3),[B] as indicated by **1 or more** of the following[C](1)(2)(3):
  - Acute[A] rise in serum creatinine to 3 times its baseline value[D] or higher
  - Acute[A] rise in serum creatinine to at least 1.5 times its baseline value[D] (increase of 50%) and serum creatinine is greater than 4 mg/dL (354 micromoles/L)
  - In child younger than 18 years, estimated GFR less than 35 mL/min/1.73m^2 (0.58 mL/sec/1.73m^2) eGFR - Pediatric Calculator and **1 or more** of the following:
    - Acute[A] rise in serum creatinine to at least 1.5 times its baseline value[D] (increase of 50%)
    - Within past 48 hours, rise in serum creatinine greater than 0.3 mg/dL (26.5 micromoles/L)
  - Decreased urine output,[E] as indicated by **ALL** of the following:
    - Assessment of urine output appropriate (eg, adequate volume status, no urinary obstruction)
    - Oligoanuria, as indicated by **1 or more** of the following:
      - Urine output less than 0.3 mL/kg/hr for 24 hours
      - Anuria (urine output less than 0.1 mL/kg/hr) for 12 hours
  - Initiation of renal replacement therapy required(4)

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Footnotes

A. A specialty society practice guideline defines acute kidney injury as a change in renal function that is known or presumed to have occurred over the previous 7 days.(1)
B. For purposes of these criteria, the term acute renal failure can be viewed as stage 3 acute kidney injury in the KDIGO classification system.(1) Of note, in the ICD-10 diagnostic coding system (main coding scheme used in labeling diagnoses), the relevant codes covering the clinical entity of significant acute kidney injury use the term acute kidney failure (eg, code N17.9).
C. In determining the stage of acute kidney injury (eg, stage 2 vs stage 3), patients should be staged according to the criteria that give them the highest stage.(1)

D. If the baseline serum creatinine is not known, absent known or suspected chronic kidney disease, a baseline serum creatinine can be approximated by assuming an estimated GFR of 75 mL/min/1.73m^2 (1.25 mL/sec/1.73m^2).(1) eGFR - Adult Calculator eGFR - Pediatric Calculator

E. The use of urine output as an indicator of acute kidney injury is important, as change in urine output can occur before a noticeable rise in creatinine.(1)(3) It is also suggested that urine output can identify patients with acute kidney injury that may otherwise be missed.(1)(3) However, urine output as a metric is only valid under the appropriate conditions. For example, the patient must not be hypovolemic, there must not be urinary obstruction, and the collection and measurement of urinary output must be complete and accurate.(1)(3) Use of urinary output to define acute kidney injury can be inaccurate in obese patients due to the nonlinear relationship between body weight and urine output. For example, in a 100-kg (220-lb) patient, urine output of 45 mL/hr over 12 hours (adequate output) would qualify as stage 2 acute kidney injury.(1)(3)

Altered mental status

- Altered mental status (ie, different from baseline), as indicated by **1 or more** of the following(1)(2)(3)(4):
  - Confusional state (eg, disorientation, difficulty following commands, deficit in attention)
  - Lethargy (eg, awake or arousable, but with drowsiness; reduced awareness of self and environment)
  - Obtundation (ie, arousable only with strong stimuli, lessened interest in environment, slowed responses to stimulation)
  - Stupor (ie, may be arousable but patient does not return to normal baseline level of awareness)
  - Coma (ie, not arousable)

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Altered mental status that is severe or persistent

- Altered mental status (ie, different from baseline) that is severe or persistent, as indicated by **1 or more** of the following(1)(2)(3)(4):
  - Confusional state (eg, disorientation, difficulty following commands, deficit in attention) that persists despite appropriate treatment (eg, of underlying cause, despite observation care)
  - Lethargy (eg, awake or arousable, but with drowsiness; reduced awareness of self and environment) that persists despite appropriate treatment (eg, of underlying cause, despite observation care)
  - Obtundation (ie, arousable only with strong stimuli, lessened interest in environment, slowed responses to stimulation)
  - Stupor (ie, may be arousable but patient does not return to normal baseline level of awareness)
  - Coma (ie, not arousable)

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Anemia

- Anemia and **1 or more** of the following(1)(2)(3)(4)(5):
  - Altered mental status
  - Myocardial ischemia
  - Dyspnea at rest or with minimal exertion
  - Syncope
  - Other findings suggesting inadequate perfusion (eg, lactic acidosis due to hypoperfusion[A])
  - Treatment with transfusion or volume replacement is ineffective at resolving **1 or more** of the following[B]:
    - Tachycardia
    - Orthostatic hypotension
    - Hypotension

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Footnotes

A. There are numerous causes of an elevated lactate level. The most common are cardiogenic or hypovolemic shock, severe heart failure, severe trauma, or sepsis. However, there are also other etiologies to consider such as vigorous exercise, seizures, liver disease, or medication use (eg, metformin, beta2-

agonists); therefore, interpretation of elevated lactate levels requires consideration of the clinical context (eg, well-appearing post exercise vs hypotensive). The severity and persistence of the elevation can sometimes be helpful in this differentiation. In most instances of lactic acidosis, blood pH is less than 7.35, with a serum bicarbonate level of 20 mEq/L (mmol/L) or lower. However, a coexisting respiratory or metabolic alkalosis can mask these findings.(6)(7)(8)(9)(10)

B. The effects of anemia need to be considered separately from those of hypovolemia.(1)

Cardiac arrhythmias of immediate concern

- Cardiac arrhythmias or findings of immediate concern, as indicated by **1 or more** of the following(1)(2)(3):
  - Heart rhythms that are inherently dangerous or unstable, as indicated by **1 or more** of the following(4)(5)(6):
    - Resuscitated ventricular fibrillation or cardiac arrest
    - Ventricular escape rhythm
    - Sustained ventricular tachycardia (30 seconds or more of ventricular rhythm at greater than 100 beats per minute)
    - Nonsustained ventricular tachycardia and **1 or more** of the following:
      - Suspected cardiac ischemia as cause or consequence of ventricular tachycardia
      - Acute myocarditis
  - Unstable cardiac conduction defects, as indicated by **1 or more** of the following(7)(8):
    - Type II second-degree atrioventricular block
    - Third-degree atrioventricular block
    - New-onset left bundle branch block with suspected myocardial ischemia(9)
  - Any heart rhythm and **1 or more** of the following(5)(8)(10)(11)(12)(13):
    - Continuous long-term ECG monitoring needed (eg, initiation of drug requiring monitoring beyond observation care)
    - Patient has automatic implantable cardioverter-defibrillator that is repeatedly firing, malfunctioning, or in need of immediate adjustment of settings beyond scope of observation care.
  - Heart rhythms of concern due to **1 or more** of the following(8):
    - Hypotension
    - Respiratory distress
    - Association with other significant symptoms (eg, syncope)(10)(11)

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Dehydration that is severe or persistent

- Dehydration and **1 or more** of the following(1)(2)(3)(4):
  - Clinical findings of severe dehydration, as indicated by **1 or more** of the following:
    - Hemodynamic instability
    - Acute renal failure (stage 3 acute kidney injury)
    - Acute kidney injury (stage 2)
    - Serum sodium greater than 150 mEq/L (mmol/L)
  - Dehydration that is persistent, as indicated by **ALL** of the following:
    - Oral rehydration therapy not tolerated or insufficient to adequately correct dehydration
    - Dehydration persists despite appropriate treatment (eg, IV fluids, observation care)

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Hemodynamic instability

- Hemodynamic instability, as indicated by **1 or more** of the following:
  - Vital sign abnormality not corrected by appropriate treatment, as indicated by **1 or more** of the following[A]:
    - Tachycardia that persists despite appropriate treatment (eg, treatment of underlying cause, despite observation care)[A]
    - Hypotension that persists despite appropriate treatment (eg, treatment of underlying cause, despite observation care)[A]

- Orthostatic hypotension that persists despite appropriate treatment (eg, treatment of underlying cause, despite observation care)[A]
- Severe hypotension in adult patient, as indicated by **1 or more** of the following:
  - Systolic blood pressure less than 80 mm Hg(1)[A]
  - Shock index greater than 1.0 (shock index is the heart rate divided by systolic blood pressure)[A](2)(3)(4)
  - Mean arterial pressure[B] less than 65 mm Hg MAP Calculator[A](1)(6)
  - IV inotropic or vasopressor medication required to maintain adequate blood pressure or perfusion(3)(6)
  - Hypoperfusion due to hypotension, as indicated by **ALL** of the following:
    - Hypotension
    - Evidence of hypoperfusion, as indicated by **1 or more** of the following:
      - Lactate of 2.0 mmol/L (18 mg/dL) or more secondary to hypotension (ie, hypoperfusion)[C](3)(6)(8)
      - Metabolic acidosis (arterial or venous[D] pH less than 7.35) not otherwise explained(3)(6)(8)
      - Significant end organ dysfunction due to hypotension (eg, Altered mental status, myocardial ischemia, 2-fold or higher acute increase in serum creatinine)(3)(6)
- Severe hypotension in pediatric patient, as indicated by **1 or more** of the following:
  - Systolic blood pressure less than 80 mm Hg in child 6 to 17 years of age[A](14)
  - Systolic blood pressure less than 75 mm Hg in child 6 months to 5 years of age[A](14)
  - Shock index greater than 0.9 in child 13 to 17 years of age (shock index is the heart rate divided by systolic blood pressure)[A](2)(15)
  - Shock index greater than 1.0 in child 7 to 12 years of age (shock index is the heart rate divided by systolic blood pressure)[A](2)(15)
  - Shock index greater than 1.2 in child 4 to 6 years of age (shock index is the heart rate divided by systolic blood pressure)[A](2)(15)
  - IV inotropic or vasopressor medication required to maintain adequate blood pressure or perfusion(5)(6)
  - Hypoperfusion due to hypotension, as indicated by **ALL** of the following:
    - Hypotension
    - Evidence of hypoperfusion, as indicated by **1 or more** of the following:
      - Lactate of 2.0 mmol/L (18 mg/dL) or more secondary to hypotension (ie, hypoperfusion)[C](6)(8)
      - Metabolic acidosis (arterial or venous pH less than 7.35) not otherwise explained[D](5)(6)(14)
      - Significant end organ dysfunction due to hypotension (eg, Altered mental status, myocardial ischemia, 2-fold or higher acute increase in serum creatinine)(5)(6)(14)

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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.(3)(5)
C. There are numerous causes of an elevated lactate level. The most common are cardiogenic or hypovolemic shock, severe heart failure, severe trauma, or sepsis. However, there are also other etiologies to consider such as vigorous exercise, seizures, liver disease, or medication use (eg, metformin, beta2-agonists); therefore, interpretation of elevated lactate levels requires consideration of the clinical context (eg, well-appearing post exercise vs hypotensive). The severity and persistence of the elevation can sometimes be helpful in this differentiation. In most instances of lactic acidosis, blood pH is less than 7.35, with a serum bicarbonate level of 20 mEq/L (mmol/L) or lower. However, a coexisting respiratory or metabolic alkalosis can mask these findings.(7)(8)
D. Analyses have concluded that venous and arterial pH measurements are highly correlated, with small differences between them that are usually not clinically significant.(9)(10)(11)(12)(13) If a mixed acid-base disorder is suspected, an arterial blood gas is indicated.(10)

High-risk thrombocytopenia (low platelet count)

- Thrombocytopenia (low platelet count) and **1 or more** of the following(1)(2)(3):
  - Severe or life-threatening bleeding (eg, intracranial, major gastrointestinal, or extensive mucosal bleeding), with any reduced platelet count
  - Platelet count less than 20,000/mm^3 (20 $x10^9$/L) with any active bleeding
  - Platelet count less than 10,000/mm^3 (10 $x10^9$/L) with minor purpura or petechiae
  - Platelet count less than 5000/mm^3 (5 $x10^9$/L)
  - Low platelet count with hemolytic anemia

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Hypotension

- Hypotension, as indicated by **1 or more** of the following:
  - Hypotension in adult patient, as indicated by **1 or more** of the following:
    - Systolic blood pressure less than 90 mm Hg[A][B](1)
    - Mean arterial pressure[C] less than 70 mm Hg[A][B] MAP Calculator(1)(2)
    - Decrease in baseline systolic blood pressure of 30 mm Hg or more, with significant signs or symptoms due to lower blood pressure (eg, near syncope, syncope, chest pain)[A][B](1)
  - Hypotension in pediatric patient, as indicated by **1 or more** of the following:
    - Systolic blood pressure less than 110 mm Hg in child 13 to 17 years of age[A][D](3)
    - Systolic blood pressure less than 100 mm Hg in child 6 to 12 years of age[A][D](3)
    - Systolic blood pressure less than 95 mm Hg in child 3 to 5 years of age[A][D](3)
    - Systolic blood pressure less than 90 mm Hg in child 1 or 2 years of age[A][D](3)
    - Systolic blood pressure less than 80 mm Hg in infant 6 to 11 months of age[A][D](3)
    - Systolic blood pressure less than 70 mm Hg in infant 3 to 5 months of age[A][D](3)
    - Systolic blood pressure less than 65 mm Hg in infant 1 or 2 months of age[A][D](3)

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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 blood pressure requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline blood pressure, medications, and clinical impact. For example, an elderly patient with heart failure may be prescribed medication with the intentional goal of a reduced pressure. If the patient's baseline SBP is 92 mm Hg to 96 mm Hg, absent signs or symptoms of hypotension, an emergency department SBP of 86 mm Hg should not automatically be categorized as hypotensive. This would hold for mean arterial pressure (MAP) as well. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term hypotension. Whether a blood pressure below the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment.

C. The mean arterial pressure (MAP) takes into account both SBP and DBP readings.

D. Interpretation of blood pressure requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline blood pressure, medications, and clinical impact. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term hypotension. Whether a blood pressure below the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment.

Hypoxemia

- Hypoxemia, as indicated by **1 or more** of the following(1):
  - Patient without baseline need for supplemental oxygen with oxygen saturation (SpO_2) of less than 90% or arterial blood gas partial pressure of oxygen (PaO_2) of less than 60 mm Hg (8.0 kPa) on room air[A][B]
  - Patient without baseline need for supplemental oxygen who now requires supplemental oxygen to keep SpO_2 greater than 89% or PaO_2 greater than 59 mm Hg (7.9 kPa)[A]
  - Patient with baseline need for supplemental oxygen who now requires increased supplemental oxygen to maintain oxygenation at baseline or acceptable level

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Footnotes

A. Pulse oximetry (SpO_2) may underestimate arterial saturation (SaO_2), especially in people with dark skin pigmentation, thick skin, cold body temperature, or who are wearing colored nail polish, and thus may not accurately detect hypoxemia.(2) Where appropriate, pulse oximetry should be measured after warming fingers or removing nail polish. Pulse oximetry results should be assessed within the context of the patient's clinical presentation, and performance of an arterial blood gas considered for a more accurate assessment of oxygenation if indicated.(2) Specific target values may require adjustment when care is delivered at high altitude.(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.

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]

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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/1.73m^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)

Neurologic abnormalities

- Neurologic abnormalities, including **1 or more** of the following(1)(2):
  - New findings that suggest **1 or more** of the following:

- CNS infection(3)(4)(5)
- Cerebral bleeding, ischemia, or vasospasm(6)(7)
- Increased intracranial pressure, hydrocephalus, or cerebral edema(8)(9)
- Spinal cord injury(10)

- Uncontrolled seizures (eg, recurrent)(11)(12)(13)
- New-onset coma (eg, Glasgow coma scale score less than 9) or abnormal mental status (eg, Glasgow coma scale score less than 14)[A](8)(14)

 GCS Calculator

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Footnotes

A. Young children and infants require modification of the Glasgow coma scale criteria.(2)

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

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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.

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)

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Peritoneal signs

- Peritoneal signs, as indicated by **1 or more** of the following(1)(2):
  - Rebound tenderness
  - Rigid abdomen
  - Involuntary guarding

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Respiratory distress

- Respiratory distress, as indicated by **ALL** of the following(1)(2)(3)(4):
  - Patient with **1 or more** of the following:
    - Dyspnea (difficulty breathing)
    - Tachypnea
    - Abnormal breathing pattern (eg, chest retractions)
    - Other evidence of difficulty breathing
  - Evidence of respiratory compromise, as indicated by **1 or more** of the following:
    - Hypoxemia
    - Altered mental status
    - Other evidence of respiratory compromise (eg, respiratory acidosis)

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Severe airflow or ventilation abnormalities

- Severe airflow or ventilation abnormalities (not responsive to observation care as appropriate), as indicated by **1 or more** of the following(1)(2)(3)(4)(5)(6)(7):
  - PCO_2 greater than 42 mm Hg (5.6 kPa) and pH less than 7.35 (new)

- Documented PCO_2 increased more than 5 mm Hg (0.7 kPa) from disease baseline that persists despite appropriate treatment (eg, nebulizer treatments, despite observation care)
- Airflow measurements[A] less than 60% of previous best or predicted (eg, peak expiratory flow rate less than 300 L/min) that persist despite appropriate treatment (eg, nebulizer treatments, despite observation care)
- Required respiratory treatments that are performable only in acute inpatient setting

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Footnotes

A. Airflow measurements may include peak expiratory flow rate or forced expiratory volume.(2)(3)

Severe electrolyte abnormalities requiring inpatient care

- Severe electrolyte abnormalities requiring inpatient care, as indicated by **ALL** of the following(1)(2)(3):
  - Electrolyte abnormality is not at acceptable patient baseline (eg, treatment effect).
  - Severe abnormality, as indicated by **1 or more** of the following:
    - Sodium[A] less than 130 mEq/L (mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(4)(5)
    - Sodium[A] less than 135 mEq/L (mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, seizures)(4)(5)
    - Sodium greater than 150 mEq/L (mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(4)
    - Sodium greater than 145 mEq/L (mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, seizures)(4)
    - Potassium less than 2.5 mEq/L (mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(6)
    - Potassium less than 3 mEq/L (mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, ECG findings,[B] paresis, paralysis)(6)(7)
    - Potassium greater than 6.5 mEq/L (mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(6)
    - Potassium greater than 5 mEq/L (mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, ECG findings,[C] paresis, paralysis)(6)(7)(8)
    - Calcium[D] less than 7 mg/dL (1.75 mmol/L) or ionized calcium less than 3.2 mg/dL (0.8 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(9)(11)

- Calcium[D] less than 8.6 mg/dL (2.15 mmol/L) or ionized calcium less than 4.65 mg/dL (1.16 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, seizures, arrhythmia, cardiac conduction disturbance)(9)(11)
- Calcium[D] greater than 14 mg/dL (3.5 mmol/L) or ionized calcium greater than 10.0 mg/dL (2.50 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(10)(11)
- Calcium[D] greater than 12 mg/dL (3 mmol/L) or ionized calcium greater than 8.0 mg/dL (2.0 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, arrhythmia, cardiac conduction disturbance)(10)(11)
- Phosphorus less than 1 mg/dL (0.32 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(12)
- Phosphorus less than 1.5 mg/dL (0.48 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, seizures)(12)
- Phosphorus greater than 10 mg/dL (3.2 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(12)
- Phosphorus greater than 4.5 mg/dL (1.45 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, crush injury, Altered mental status, seizures, arrhythmia, cardiac conduction disturbance)(12)
- Magnesium less than 1 mg/dL (0.41 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(12)
- Magnesium less than 1.5 mg/dL (0.62 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, seizures, arrhythmia, cardiac conduction disturbance)(12)
- Magnesium greater than 4.9 mg/dL (2 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(12)
- Magnesium greater than 3.0 mg/dL (1.23 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, Altered mental status, arrhythmia, cardiac conduction disturbance)(12)
- Uric acid greater than 20 mg/dL (1.19 mmol/L) not corrected to near normal or near chronic baseline despite observation care treatment(13)
- Uric acid greater than 8 mg/dL (0.48 mmol/L) with new (or presumed new) severe finding requiring inpatient management (eg, arrhythmia, cardiac conduction disturbance, seizure)(13)

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Footnotes

A. In patients with hyperglycemia, a corrected serum sodium should inform decision making.(4)
B. ECG manifestations of hypokalemia include ST-segment depression, flattened T-waves, and increased U-wave prominence.(7)
C. ECG changes associated with hyperkalemia include peaked T-waves, prolonged PR interval, loss of P-waves, prolonged QRS interval, or sinus bradycardia. Other manifestations include second-degree or third-degree atrioventricular block or a junctional escape rhythm. The ultimate result of hyperkalemia can be ventricular fibrillation, pulseless electrical activity, or asystole. ECG changes are not a sensitive indicator of severe hyperkalemia; patients with severe hyperkalemia may have minimal or nondiagnostic abnormalities. While a normal ECG does not exclude hyperkalemia, it does confer a much lower risk of dangerous arrhythmia. Hyperkalemic patients with isolated T-wave abnormalities are at low risk of a serious adverse event overall, while patients with conduction abnormalities and other more severe ECG findings are at higher risk.(6)(7)(8)
D. An ionized calcium level may be more accurate than a total serum calcium level, especially in the setting of acidosis, renal failure, multiple transfusions, hypoalbuminemia, or the presence of a paraprotein.(9)(10)

Severe pain requiring acute inpatient management

- Severe pain requiring inpatient management, as indicated by **1 or more** of the following(1)(2)(3)(4):
  - Inpatient parenteral analgesic agent treatment required,[A] as indicated by **ALL** of the following:
    - Pain insufficiently responsive to nonpharmacologic and oral pharmacologic analgesia (eg, NSAID, oral opioid)
    - Need for parenteral treatment persists despite observation care (eg, adjustments in dosage, frequency, medication, route).
  - Pain control regimen for next level of care not established, as indicated by **ALL** of the following:
    - Regimen used to achieve sufficient pain control is not readily performable at next level of care.
    - Unable to convert patient to regimen performable at next level of care despite observation care (eg, adjustments in dosage, frequency, medication, route)
  - Suspected new or deteriorating disease process as etiology (eg, new site of metastatic disease) requiring inpatient evaluation and treatment (eg, urgent radiation therapy)(7)
  - Palliative procedure planned that necessitates inpatient care for assessment and monitoring needs (eg, celiac block, stent to relieve obstruction)

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Footnotes

A. Many validated instruments are available to quantify pain.(4)(5) A visual analog or numerical rating scale graded from 0 to 10 is often used; moderate pain correlates with a score of 4 to 6 and severe pain is 7 to 10.(4) Different scales may be more appropriate for different disease processes or patient populations.(5)(6)

Severe respiratory findings

- Severe respiratory findings (not responsive to observation care as appropriate), including **1 or more** of the following(1)(2)(3):
  - Respiratory distress, as indicated by **ALL** of the following(2)(3)(4)(5):
    - Patient with **1 or more** of the following:
      - Dyspnea (difficulty breathing)
      - Tachypnea
      - Abnormal breathing pattern (eg, chest retractions)
      - Other evidence of difficulty breathing
    - Evidence of respiratory compromise, as indicated by **1 or more** of the following:
      - Hypoxemia
      - Altered mental status
      - Other evidence of respiratory compromise (eg, respiratory acidosis)
  - Gross hemoptysis[A](6)(7)
  - Acute cyanosis

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Footnotes

A. Gross or massive hemoptysis is either occurring at a significant rate over time (eg, 200 mL over 24 hours) or is rapid (eg, 100 mL within an hour). Regardless of the amount, which can be difficult to ascertain, clinical factors such as the ability of a patient to maintain a patent airway and expectorate blood, the swiftness of available therapeutic options, and the patient's underlying physiologic reserve are all relevant situations to consider in managing hemoptysis.(6)

Tachycardia

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

References

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

Footnotes

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

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

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

Tachypnea

- Tachypnea,[A][B] as indicated by **1 or more** of the following:
  - Respiratory rate greater than 20 breaths per minute in adult[A][B](1)
  - Respiratory rate greater than 18 breaths per minute in child 13 to 17 years of age[A][B](2)
  - Respiratory rate greater than 22 breaths per minute in child 6 to 12 years of age[A][B](2)
  - Respiratory rate greater than 25 breaths per minute in child 3 to 5 years of age[A][B](2)
  - Respiratory rate greater than 30 breaths per minute in child 1 or 2 years of age[A][B](2)

- Respiratory rate greater than 40 breaths per minute in infant 6 to 11 months of age[A][B](2)
- Respiratory rate greater than 45 breaths per minute in infant 3 to 5 months of age[A][B](2)
- Respiratory rate greater than 55 breaths 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 respiratory rate requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline respiratory rate and whether the respiratory rate is indicative of significant underlying respiratory or other pathology. A mildly increased respiratory rate (eg, 20 to 22 breaths per minute in an adult), absent other indications of serious illness (eg, hypoxemia, metabolic acidosis, decreased tidal volume, pain), may be transitory and not clinically important. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term tachypnea. Whether a respiratory rate above the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment. In addition, the measurement of the respiratory rate is subject to error. A medical textbook states that because there can be significant breath-to-breath variation in respiratory rate, the rate should be assessed for at least 30 seconds, preferably for a full minute.(1) This same textbook also states that new technologies designed to measure the respiratory rate have not proved to be clinically useful.(1)

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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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)
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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.

Vomiting that is severe or persistent

- Vomiting and **1 or more** of the following(1)(2)(3)(4):
  - Pattern or content of vomitus suggests severe underlying cause or complication (eg, projectile, feculent, bilious, coffee ground, bloody).
  - Appropriate antiemetic treatment (eg, in observation care) does not sufficiently reduce vomiting.
  - Treatment regimen necessary to adequately control vomiting requires inpatient level of care (eg, not available in outpatient setting).

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