Medical Oncology GRG

GRG: PG-ONC (ISC GRG)

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

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

Care Planning - Inpatient Admission and Alternatives

Clinical Indications for Admission to Inpatient Care

- Hospital admission is needed for appropriate care of the patient because of **1 or more** of the following(1)(2)(3)(4)(5):
  - High-risk infection, as indicated by **1 or more** of the following(6)(7):
    - Hypotension
    - Bacteremia
    - Catheter-related infection requiring inpatient monitoring and testing
    - Fever with neurologic abnormalities

- Skin infection, including **1 or more** of the following:
  - Rapidly progressing cellulitis
  - Herpes zoster or other viral skin infection that is rapidly progressing or disseminated(8)
  - Opportunistic skin infections (eg, aspergillosis, candidiasis)
  - Ecthyma gangrenosum[A](9)
- Respiratory syncytial virus infection(6)
- Infection requiring inpatient therapy and monitoring (eg, cytomegalovirus retinitis)(10)(11)(12)

○ Tumor lysis syndrome[B](14)(15)(16)

− Gastrointestinal complications, as indicated by **1 or more** of the following:
- Mucositis requiring IV hydration support or parenteral nutrition(17)(18)
- Diarrhea that cannot be managed at other than inpatient level of care (eg, frequency, risk of dehydration)
- Oral candidiasis that requires inpatient management (eg, parenteral nutrition, pain control, parenteral antifungals)
- Significant abdominal pain with suspicion of colitis (eg, neutropenic enterocolitis, *Clostridioides difficile*-associated diarrhea)(19)(20)

○ Severe electrolyte abnormalities requiring inpatient care (21)(22)

○ Lactic acidosis[C]

○ Severe pain requiring acute inpatient management (25)(26)

○ Pathologic fracture with major instability (eg, spinal, pelvis, hip, or femur fracture) or spinal cord compression(27)(28)(29)

− Neurologic complications, as indicated by **1 or more** of the following(30)(31):
- Intracranial hypertension (eg, papilledema, CT scan findings)
- Altered mental status that is severe or persistent
- Acute neurologic deficits

− Leukostasis,[D] as indicated by **1 or more** of the following(2)(15)(32)(33):
- Pulmonary leukostasis (eg, dyspnea, tachypnea, Hypoxemia)
- CNS leukostasis (eg, headache, ataxia, confusion)
- Priapism
- Thrombosis or hemorrhage(34)
- Infarction (myocardial, renal)

− Malignant ascites or effusion, as indicated by **1 or more** of the following(35)(36):
- Hemodynamic instability
- Respiratory distress
- Pain that persists despite observation care
- Vomiting that is severe or persistent
- Infection suspected (eg, Fever)
- Symptomatic pericardial effusion(37)

− Tumor-related complications, as indicated by **1 or more** of the following(15):
- Cardiac tumor causing symptoms (eg, dyspnea, embolism, fluid retention)(38)
- Tracheoesophageal fistula(39)
- Airway or pharyngeal obstruction not treatable with outpatient procedure or management(40)(41)
- Intestinal perforation(42)(43)(44)
- Biliary obstruction not treatable with outpatient procedure or management(45)(46)
- Urinary obstruction not treatable with outpatient procedure or management(47)(48)
- Vascular obstruction (eg, superior vena cava syndrome) not treatable with outpatient procedure or management(49)

- Bone disease (eg, primary tumor, metastases) causing spinal cord compression or major limb instability (femur, pelvis, spine)(29)
- Gross hematuria(4)(47)
- Refractory hypoglycemia (eg, insulinoma, Warburg effect)(50)
- Active bleeding(51)(52)
- Altered mental status or seizure due to mass effect or metastases(53)

− Allogeneic hematopoietic stem cell transplant needed, as indicated by **1 or more** of the following(54)(55)(56):

− Adult (age 18 years or older) Hodgkin lymphoma and **1 or more** of the following(57)(58):

- Relapse from primary treatment in less than 3 months, with Deauville score of 4 or 5 and at least partial response to therapy
- Relapse at 3 months or later
- Refractory to primary treatment

- Pediatric (child or young adult age 39 years or younger) Hodgkin lymphoma with relapse after autologous stem cell transplant(59)

− Follicular or classic follicular lymphoma and **1 or more** of the following(60):

- Consolidative therapy for patient in third remission
- Histologic transformation to diffuse large B-cell lymphoma or high-grade B-cell lymphoma and complete or partial response to therapy

- Marginal zone cell lymphoma and **1 or more** of the following(60):
    - Third-line consolidation therapy
    - Histologic transformation to diffuse large B-cell lymphoma or high-grade B-cell lymphoma and complete or partial response to therapy
- Nodal marginal zone lymphoma and third-line consolidation(60)
- Mantle cell lymphoma with relapsed or refractory disease and partial or complete response(60)
- Adult Burkitt lymphoma with relapsed or refractory disease after 6 or more months of appropriate first-line therapy and complete or partial response to second-line therapy(60)
- Pediatric (child or young adult age 39 years or younger) Burkitt lymphoma with relapsed or refractory disease(61)
- Pediatric (child or young adult age 39 years or younger) large B-cell lymphoma (eg, diffuse large B-cell lymphoma, high-grade B-cell lymphoma) with relapsed or refractory disease(61)

− B-cell lymphoma and **ALL** of the following(60):

- B-cell lymphoma subtype appropriate for transplant, including **1 or more** of the following:
    - Adult diffuse large B-cell lymphoma
    - High-grade B-cell lymphoma
    - Primary mediastinal B-cell lymphoma
- Relapsed after 12 months
- Complete or partial response to treatment

- ALK-positive large B-cell lymphoma with refractory or relapsed disease and with complete response to a next-generation ALK inhibitor(60)
- Mycosis fungoides or Sezary syndrome that is refractory or progressive(62)
- Subcutaneous panniculitis-like T-cell lymphoma for consolidation or with relapsed or refractory disease(62)
- Peripheral T-cell lymphoma with at least partial response to therapy[E](62)(63)
- Adult T-cell leukemia/lymphoma with high-risk chronic, acute, or lymphoma subtype responsive to chemotherapy(63)

− Nasal type extranodal NK/T-cell lymphoma and **1 or more** of the following(63):

- Stage I or stage II nasal disease with partial or refractory response to induction therapy
- Stage II or stage IV nasal disease
- Stage I to IV extra-nasal disease

- Aggressive NK-cell leukemia for consolidation therapy(63)
- T-cell prolymphocytic leukemia with complete or partial response to induction therapy(63)

- Hepatosplenic T-cell lymphoma with complete or partial response to chemotherapy(63)
- Chronic lymphocytic leukemia or small lymphocytic lymphoma and **1 or more** of the following(64)(65):
  - Relapsed or refractory disease to small molecule inhibitor therapy
  - Richter transformation with disease responding to therapy
  - Pure red cell aplasia (autoimmune cytopenia) refractory to treatment
- Acute promyelocytic leukemia in adult age 18 years or older with relapsed disease unresponsive or partially responsive to treatment(66)
- Acute promyelocytic leukemia in child younger than 18 years and **1 or more** of the following(67):
  - Relapsed disease in second complete remission
  - Refractory disease
- Acute myeloid leukemia in adult age 18 years or older and **1 or more** of the following(66)(68)(69):
  - Positive response to low-intensity induction therapy
  - Complete remission after re-induction therapy
  - Refractory or relapsed disease
  - Unable to complete consolidation
  - Consolidation for high-risk disease[F] (eg, measurable minimal residual disease positivity, KIT mutation, FLT3 mutation, complex or monosomal karyotype)
  - Consolidation for intermediate-risk disease[F] (eg, mutated NPM1 with FLT3-ITD mutation) in remission
- Acute myeloid leukemia in child younger than 18 years and **1 or more** of the following(70)(71)(72)(73):
  - Consolidation therapy for intermediate-risk or high-risk disease in first remission[G]
  - Relapsed disease in second complete remission
  - Refractory disease(71)
- Blastic plasmacytoid dendritic cell neoplasm in adult age 18 years or older with complete remission(66)(74)
- Chronic myeloid leukemia and **1 or more** of the following(75)(76):
  - Advanced phase (blast phase or accelerated phase) at diagnosis or while on tyrosine kinase inhibitor therapy
  - Tyrosine kinase inhibitor-resistant disease (eg, due to mutation)
  - Failure to respond to tyrosine kinase inhibitor
  - Intolerant of tyrosine kinase inhibitor
  - Disease progression while on tyrosine kinase inhibitor therapy
  - Relapsed disease after transplant
- Adult acute lymphoblastic leukemia(77)(78)(79)
- Pediatric[H] acute lymphoblastic leukemia and **1 or more** of the following(80):
  - B-cell acute lymphoblastic leukemia in first remission and **1 or more** of the following:
    - Infant younger than 3 months with MLL/KMT2A mutation
    - Infant younger than 6 months with MLL/KMT2A mutation and WBC count at initial diagnosis 300,000/mm^3 (300 $x10^9$/L) or greater
    - Minimal residual disease of 0.01% or more at post consolidation
    - Hypodiploid (fewer than 44 chromosomes) and enrolled in a clinical trial
  - B-cell acute lymphoblastic leukemia and **1 or more** of the following:
    - Induction failure
    - Relapsed or refractory disease not responding to treatment (less than complete remission)
    - Minimal residual disease of 0.01% or more at post consolidation
  - T-cell acute lymphoblastic leukemia and **1 or more** of the following:
    - Minimal residual disease positivity of more than 0.1% at consolidation

- Induction failure
- Medullary or extramedullary relapse
- Refractory disease

- Myeloid or lymphoid neoplasm with sustained eosinophilia in periphery, bone marrow, or tissue and **1 or more** of the following(81):
  - FGFR1 rearrangement
  - JAK2 rearrangement
  - ABL1 rearrangement
  - FLT3 rearrangement
  - PDGFRA or PDGFRB rearrangement and lack of response to imatinib
- Acute leukemia of ambiguous lineage (also known as mixed-phenotype acute leukemia)(82)(83)
- Aplastic anemia and **ALL** of the following(84)(85):
  - Marrow cellularity below 25% or less than 50% if less than 30% of residual cells are hematopoietic(86)
  - Severely abnormal cell counts, as indicated by **2 or more** of the following(86):
    - Absolute neutrophil count less than 500/mm^3 (0.5 x10^9/L)
    - Absolute reticulocyte count less than 60,000/mm^3 (60 x10^9/L)
    - Platelet count less than 20,000/mm^3 (20 x10^9/L)
- Myelodysplastic syndrome and **1 or more** of the following(87)(88)(89):
  - Intermediate-risk, high-risk, or very high-risk disease[I](90)
  - Significant thrombocytopenia, neutropenia, or marrow blasts unresponsive to chemotherapy or immunosuppressive therapy
  - Repeat transplant in relapse if successful prolonged remission with first transplant
  - Repeat transplant if no response to first transplant
  - Symptomatic anemia with serum erythropoietin level of more than 500 International Units (IU)/L, without mIDH1 mutation and relapse or unresponsive to treatment
- Myelodysplastic myeloproliferative overlap neoplasm, including **1 or more** of the following(87):
  - Juvenile myelomonocytic leukemia
  - Chronic myelomonocytic leukemia-2 (eg, 10% to 19% bone marrow blasts) and **1 or more** of the following:
    - Intermediate-risk or high-risk disease[I]
    - Significant thrombocytopenia, neutropenia, or marrow blasts unresponsive to chemotherapy or immunosuppressive therapy
    - High transfusion burden
  - Atypical chronic myeloid leukemia (also known as myelodysplastic myeloproliferative neoplasm and neutrophilia)
  - Overlap syndrome (unclassifiable)
- Primary myelofibrosis and **1 or more** of the following(91):
  - Low risk[J] and **1 or more** of the following:
    - Transfusion-dependent refractory anemia
    - Circulating blast cells of 2% or more in peripheral blood
    - Adverse or complex cytogenetics
    - Molecular abnormalities (eg, ASXL1, RAS, TP53)
    - Refractory thrombocytopenia
  - Intermediate or high risk[J]
  - Transformation to blast phase or acute myeloid leukemia
- Multiple myeloma and **1 or more** of the following(92)(93):
  - Primary progressive disease

- Disease responsive to primary therapy
- Progressive disease after initial autologous hematopoietic stem cell transplant
- Planned tandem allogeneic transplant[K]

− Waldenstrom macroglobulinemia (lymphoplasmacytic lymphoma) and **ALL** of the following(94):

- Relapsed disease
- Enrolled in clinical trial

- Langerhans cell histiocytosis with relapsed or refractory multisystem or single system lung disease(95)
- Systemic mastocytosis[L] and **1 or more** of the following(96):
  - Aggressive disease[L] with response to cytoreductive therapy
  - Associated hematologic neoplasm that requires allogeneic transplant
  - Associated hematologic neoplasm with progression of disease

− Sickle cell disease and **1 or more** of the following(97)(98)(99):

- HLA-matched sibling donor available(100)
- History of stroke or CNS event lasting more than 24 hours(97)(101)
- Acute chest syndrome requiring 2 or more hospitalizations within 2 years despite hydroxyurea therapy(97)(101)
- Acute chest syndrome requiring exchange transfusion(101)
- Vaso-occlusive pain crisis (2 or more per year within the last 2 years) despite hydroxyurea therapy(97)(101)
- Tricuspid valve regurgitant jet of 2.7 m/sec or more on echocardiogram(97)(98)
- Transfusion requirement of 8 or more transfusions per year for 1 or more years(97)(98)
- Recurrent priapism(101)
- Enrolled in clinical trial for transplant and **1 or more** of the following(97):
  - Sickle cell nephropathy with moderate or severe proteinuria or GFR 50% below predicted value eGFR - Adult Calculator eGFR - Pediatric Calculator(101)
  - Bilateral proliferative retinopathy with visual impairment(101)
  - Osteonecrosis of more than one joint(101)
  - Red cell alloimmunization of 2 or more antibodies(101)
  - Abnormal cerebral MRI scan and impaired neuropsychological function(101)
  - Sickle-related liver injury or iron overload with direct bilirubin of more than 0.4 mg/dL (6.8 micromoles/L) or ferritin greater than 1000 ng/mL (mcg/L)(97)

− Genetic disease and appropriate clinical condition, as indicated by **1 or more** of the following(54)(102):

- Severe combined immune deficiency(103)(104)
- Beta thalassemia major(105)(106)
- Krabbe disease (globoid cell leukodystrophy)(107)
- Diamond-Blackfan anemia(108)(109)
- Dyskeratosis congenita(110)
- Wiskott-Aldrich syndrome(111)(112)
- Fanconi anemia(113)(114)
- Paroxysmal nocturnal hemoglobinuria unresponsive to complement inhibitors(115)(116)
- Hurler syndrome(117)
- Infantile osteopetrosis(118)
- Recessive dystrophic epidermolysis bullosa(119)
- Hyperimmunoglobulin M syndrome(120)

- Leukocyte adhesion deficiency(121)
- Chediak-Higashi syndrome(122)
- Mitochondrial neurogastrointestinal encephalomyopathy(123)
- Hemophagocytic lymphohistiocytosis(124)
- Severe congenital neutropenia(125)
- Shwachman-Diamond syndrome(126)
- Congenital amegakaryocytic thrombocytopenia(127)
- Juvenile metachromatic leukodystrophy(107)
- Chronic granulomatous disease(128)(129)
- Cerebral X-linked adrenoleukodystrophy(107)
- Adenosine deaminase 2 (DADA2) deficiency(130)
- Congenital erythropoietic porphyria(131)

▪ Familial or acquired hemophagocytic lymphohistiocytosis(132)

− Juvenile idiopathic arthritis and **1 or more** of the following(133):

- Destructive polyarthritis refractory to treatment
- Macrophage activation syndrome
- Secondary hemophagocytic lymphohistiocytosis
- Life-threatening infection while on immunosuppression

− Autologous hematopoietic stem cell transplant needed for **1 or more** of the following(55):

− Adult (age 18 years or older) Hodgkin lymphoma and **1 or more** of the following(57):

- Relapsed disease
- Nodular lymphocyte predominant Hodgkin lymphoma with refractory or suspected relapse

▪ Pediatric (child or young adult age 39 years or younger) Hodgkin lymphoma with relapse and response (eg, Deauville score of 3 or less on PET scan) to induction therapy(59)

− Follicular or classic follicular cell lymphoma and **1 or more** of the following(60):

- Second-line or third-line consolidation
- Histologic transformation to diffuse large B-cell lymphoma or high-grade B-cell lymphoma and partial or complete response to treatment

− Marginal zone cell lymphoma and **1 or more** of the following(60):

- Second-line consolidation
- Relapsed or refractory disease with complete response to treatment

▪ Adult (age 18 years or older) Burkitt lymphoma with relapsed disease after 6 months of appropriate first-line therapy and with complete or partial response(60)

▪ Pediatric (child or young adult age 39 years or younger) Burkitt lymphoma with relapsed or refractory disease(61)

− B-cell lymphoma and **ALL** of the following(60):

- B-cell lymphoma subtype appropriate for transplant, including **1 or more** of the following:
  - Adult diffuse large B-cell lymphoma(134)
  - High-grade B-cell lymphoma
  - Primary mediastinal large B-cell lymphoma
- Relapsed disease and **1 or more** of the following:
  - Relapse after 12 months and complete or partial response to therapy
  - Relapse within 12 months and complete response to therapy

▪ ALK-positive large B-cell lymphoma with refractory or relapsed disease and chemosensitive disease(60)

- Pediatric (child or young adult age 39 years or younger) large B-cell lymphoma (eg, diffuse large B-cell lymphoma, high-grade B-cell lymphoma)(61)
- Pediatric (child or young adult age 39 years or younger) primary mediastinal large B-cell lymphoma with relapsed disease(61)

− Mantle cell lymphoma and **1 or more** of the following(60):
  - First-line consolidation
  - Relapsed or refractory disease with complete response

- Plasmablastic lymphoma (HIV-associated or non-HIV-associated) in first complete remission(60)
- Nodal marginal zone lymphoma with relapsed or refractory disease(60)
- Multicentric Castleman disease associated with polyneuropathy, organomegaly, endocrinopathy, monoclonal protein, skin changes (POEMS)(135)
- Chronic lymphocytic leukemia with **ALL** of the following(64)(65):
  - Richter transformation
  - Patient not candidate for allogeneic transplant
- Peripheral T-cell lymphoma[E](63)
- T-cell prolymphocytic leukemia with complete or partial response to induction therapy, and allogeneic transplant not feasible(63)

− Nasal type extranodal NK/T-cell lymphoma and **1 or more** of the following(63):
  - Stage I or stage II nasal disease with partial or refractory response to induction therapy
  - Stage III or IV nasal disease
  - Stage I to IV extra-nasal disease

- Hepatosplenic T-cell lymphoma with complete or partial response to chemotherapy, and allogeneic transplant not feasible(63)
- Breast implant-associated anaplastic large cell lymphoma with response to systemic therapy(63)
- Acute promyelocytic leukemia with remission after second-line therapy (eg, after relapse)(66)(67)
- Acute myeloid leukemia in patient who prefers not to receive blood transfusions(66)
- Blastic plasmacytoid dendritic cell neoplasm with complete remission(66)(74)

− Multiple myeloma and **1 or more** of the following(92)(93)(136):
  - After induction chemotherapy in patient judged appropriate for transplant (eg, sufficient hepatic, renal, pulmonary, and cardiac function)
  - Progressive disease
  - Refractory disease
  - Planned tandem autologous transplant[K]
  - Repeat autologous transplant for relapsed disease

- Neuroblastoma and high-risk disease[M](137)
- Waldenstrom macroglobulinemia (lymphoplasmacytic lymphoma) with relapse(94)
- Adult medulloblastoma with no evidence of disease after conventional dose re-induction chemotherapy(138)

− Primary CNS lymphoma and **1 or more** of the following(138)(139):
  - In remission after induction therapy
  - Refractory or recurrent disease with at least partial response to chemotherapy

− Immunoglobulin light chain amyloidosis and **ALL** of the following(140)(141)(142)(143):
  - No symptomatic or medically refractory ventricular or atrial arrhythmias
  - No persistent symptomatic pleural effusions
  - No uncompensated heart failure
  - No orthostatic hypotension refractory to medical therapy
  - No extensive gastrointestinal involvement or bleeding
  - No factor X deficiency (eg, factor X level less than 25%, evidence of bleeding)

- Germ cell tumor, refractory to treatment or metastatic(144)(145)

- Gestational trophoblastic neoplasia, refractory to treatment(146)
- Scleroderma (also known as systemic sclerosis)(147)(148)
- Multiple sclerosis refractory to treatment or with relapsing-remitting course(149)(150)
- Myasthenia gravis refractory to treatment(151)(152)
- Stiff person syndrome with antibodies to glutamic acid decarboxylase that is refractory to treatment(153)(154)
- Chronic inflammatory demyelinating polyneuropathy(155)
- Autologous transplant for gene therapy (eg, sickle cell anemia, Wiskott-Aldrich syndrome, Fanconi anemia)(112)(156)(157)(158)

− Complications of hematopoietic stem cell transplant, as indicated by **1 or more** of the following(4)(56)(159)(160):

- Acute graft vs host disease of stage 2 or higher[N](161)
- Primary graft failure(159)(162)
- Infection requiring inpatient treatment (eg, IV antimicrobials)(4)(6)(11)(20)(163)
- Veno-occlusive disease (sinusoidal obstruction syndrome) of the liver(4)(159)(164)(165)
- Acute respiratory distress syndrome(166)
- Other complication of hematopoietic stem cell transplant (eg, bronchiolitis obliterans, alveolar hemorrhage, thrombotic microangiopathy, heart failure) requiring inpatient management(4)(51)(160)(167)(168)(169)(170)

- High-dose radioactive iodine (eg, greater than 200 mCi (7400 MBq))[O](171)(172)
- Radioactive implant needing inpatient environment (eg, cervical radiation implants, iodine-131 iobenguane, high specific activity MIBG)[P](174)(176)
- Radioligand therapy requiring inpatient environment (eg, iodine-131 iobenguane, high specific activity MIBG)[Q](177)(178)
- New diagnosis of malignancy (eg, acute leukemia) that requires inpatient level of monitoring, treatment, or care (ie, cannot be provided at alternative level of care)(32)(67)(70)(179)(180)(181)
- Bone marrow harvest needed[R](182)(183)
- Proton beam therapy in pediatric or other patient requiring sedation during procedure(184)
- Inpatient palliative care needed.[S] See Inpatient Palliative Care Criteria GRG.
- **Medical Oncology** 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(188):
  - 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 include(2)(26)(189)(190):

- Outpatient care in emergency department, observation care (see General Criteria: Observation Care ISC guideline as appropriate), rapid treatment site, urgent care center, infusion center, clinic, medical office, home, or other outpatient setting
  - Parenteral hydration and diuresis
  - Antiemetics(191)
  - Chemotherapeutic infusions
  - External beam radiation or brachytherapy implants(173)(174)(175)
  - Laboratory and renal function monitoring(192)
  - Imaging
  - Oral or parenteral antibiotic, antifungal, or antiviral treatment(6)
  - Analgesics and other pain control interventions(25)
  - Immunosuppressive therapy(84)
  - Outpatient anticoagulation(192)
  - Outpatient thoracentesis, paracentesis(193)
  - Intensive outpatient follow-up
  - Myeloid growth factors (granulocyte colony-stimulating factor, granulocyte-macrophage colony-stimulating factor)[T](194)
  - Erythropoietic-stimulating agents (ie, recombinant human erythropoietin, darbepoetin) for symptomatic anemia(194)
  - Outpatient transfusions(194)
  - Outpatient IV iron(194)
  - Outpatient apheresis or blood removal for hyperviscosity(92)
  - Outpatient harvesting, chemotherapy, and autologous (and some allogeneic) hematopoietic stem cell transplant by organized ambulatory transplant systems
- Observation. See General Criteria: Observation Care ISC guideline as appropriate.
- Home care
  - Palliative care(26)(195)(196)
  - Analgesics and other pain control interventions(25)
  - IV antibiotics
  - IV antiemetics
  - Enteral or parenteral nutrition(18)
  - Rapid culture, cell count, and outpatient follow-up
- Recovery facility
  - Palliative care, including respite care(26)(195)(196)
  - Analgesics and other pain control interventions(25)
  - Enteral or parenteral nutrition(18)
  - Careful monitoring and follow-up
  - Care of comorbidities

Hospitalization

General Recovery Course

Stage	Level of Care	Clinical Status	Interventions

1	• ICU or intermediate care[U] • Social Determinants of Health Assessment • Discharge planning. See Discharge Planning Tool SR.	• **Clinical Indications met[V]**	• Inpatient interventions as needed
2	• Floor • Social Determinants of Health Assessment	• **No ICU or intermediate care needs**	• Inpatient interventions continue • Transition to oral routes
3	• **Activity level acceptable** • Social Determinants of Health Assessment • Floor to discharge • **Complete discharge planning**	• **Hemodynamic stability** • **Pain and nausea absent or adequately managed** • **Temperature status acceptable** • **No infection, or status acceptable** • **Abdominal status acceptable** • **Mucositis absent or adequately resolved** • **Diarrhea absent or adequately controlled** • **No neutropenia, or status acceptable** • **Hgb/Hct stable and acceptable for next level of care** • **Platelet count acceptable for next level of care** • **Hematologic complications absent or stabilized** • **Neurologic status acceptable** • **Electrolyte status acceptable** • **Tumor lysis absent or resolved** • **Malignant effusions absent or acceptable for next level of care** • **Pathologic fracture absent or stabilized** • **General Discharge Criteria met**	• **Intake acceptable** • **No inpatient interventions needed**

(4)(25)(27)(159)(192)(197)

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(198)(199):
    - Tachycardia absent
    - Hypotension absent
    - No evidence of inadequate perfusion (eg, no myocardial ischemia)
    - No other hemodynamic abnormalities (eg, no Orthostatic hypotension)

− Pain and nausea absent or adequately managed, as indicated by **1 or more** of the following(25)(191)(200)(201)(202):

- No pain or nausea
- Minimal discomfort on oral medications
- Pain and nausea managed on regimen performable at next level of care

− Temperature status acceptable, as indicated by **1 or more** of the following(203)(204)(205):

- Temperature less than 100.5 degrees F (38.1 degrees C) (oral) and greater than 96.8 degrees F (36 degrees C) (rectal)
- Temperature as expected for disease process and appropriate for management at next level of care

− No infection, or status acceptable, as indicated by **1 or more** of the following(204)(205)(206)(207)(208):

- No infection present
- Infection status acceptable for next level of care, as indicated by **ALL** of the following(209):
    - 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

− Abdominal status acceptable, as indicated by **ALL** of the following(210):

- Bowel sounds present
- No ileus, signs of obstruction, or peritonitis
- Abdominal distention absent or manageable at next level of care

- Mucositis absent or adequately resolved
- Diarrhea absent or adequately controlled

− No neutropenia, or status acceptable, as indicated by **1 or more** of the following(6)(211)(212)(213)(214):

- No neutropenia problem
- Neutropenia adequately resolved or stabilized, as indicated by **1 or more** of the following:
    - Afebrile
    - Absolute neutrophil count greater than 500/mm^3 (0.5 x10^9/L)
    - No high-risk findings, as indicated by **ALL** of the following:
        - Hypotension absent
        - Tachypnea absent
        - Hypoxemia absent
        - No evidence of significant focal infection (eg, cellulitis, pneumonia, tunnel infection, perirectal abscess)
        - No evidence of infection with drug-resistant organism
        - Mental status normal or at baseline
        - Heart failure absent, improved, or at baseline
        - No acute or acute-on-chronic renal failure (eg, creatinine less than or equal to 2.5 mg/dL (221 micromoles/L) or at baseline)
        - No uncontrolled arrhythmia, hypocalcemia or hypercalcemia, or hyponatremia (eg, serum sodium of 135 mEq/L (mmol/L) or less)
        - Liver function normal, at baseline, or improved

- Multinational Association for Supportive Care in Cancer (MASCC) Risk Index score of 21 or more or Clinical Index of Stable Febrile Neutropenia (CISNE) score of 2 or less[W](214)(215) MASCC Calculator
- Hgb/Hct stable and acceptable for next level of care
- Platelet count acceptable for next level of care

− Hematologic complications absent or stabilized, as indicated by **ALL** of the following(23)(216)(217)(218):
- Superior vena cava syndrome absent, or evaluation and treatment appropriate for next level of care
- Leukostasis, hyperviscosity, and microangiopathy absent, resolved, or appropriate for next level of care
- Hemorrhage (eg, cystitis, disseminated intravascular coagulation, gastrointestinal bleeding) absent or adequately resolved

− Neurologic status acceptable, as indicated by neurologic function and mental status being **1 or more** of the following(219)(220):
- Normal
- Baseline
- Appropriate for next level of care

− Electrolyte status acceptable, as indicated by **1 or more** of the following(221):
- Electrolyte abnormality manageable at next level of care[X]
- No electrolyte abnormality, as indicated by **ALL** of the following:
  - Potassium greater than 3.5 mEq/L (mmol/L) and less than 5.0 mEq/L (mmol/L)(222)
  - Sodium greater than 135 mEq/L (mmol/L) and less than 145 mEq/L (mmol/L)(223)(224)
  - Calcium[Y] greater than 8.5 mg/dL (2.13 mmol/L) and less than 10.5 mg/dL (2.63 mmol/L)
  - Phosphorus greater than 2.5 mg/dL (0.81 mmol/L) and less than 5.0 mg/dL (1.62 mmol/L)(227)
  - Magnesium greater than 1.5 mEq/L (0.75 mmol/L) and less than 3.0 mEq/L (1.5 mmol/L)(227)

- Tumor lysis absent or resolved
- Malignant effusions absent or acceptable for next level of care
- Pathologic fracture absent or stabilized

− 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(228):
- Oral hydration, medications, and diet
- Enteral hydration, medications, and diet
- Administration routes performable at next level of care

− No inpatient interventions needed; examples include:
- Protective isolation with laminar flow
- Radioactive implant treatment
- Vital signs, neurologic signs, or vascular checks more often than feasible at next level of care
- Urgent chemotherapy in unstable patient
- Cell pheresis or apheresis in unstable patient
- Urgent plasma, red blood cell, or platelet transfusion
- Urgent clotting factor administration and follow-up monitoring

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

Case Management

See Medical Admission Case Management GRG GRG for further information.

Discharge Destination

- Post-hospital levels of admission may include:
  - Home.
  - Home healthcare. See Medical Admission Home Care GRG HC or Geriatric Admission Home Care GRG HC for further information.
  - Recovery facility care. See Medical Admission Recovery Facility Care GRG RFC or Geriatric Admission Recovery Facility Care GRG RFC for further information.
  - Inpatient rehabilitation facility. See Inpatient Rehabilitation Facility (IRF) Admission Recovery Facility Care GRG RFC for further information.

Evidence Summary

Criteria

The evidence for the clinical indications found in this guideline includes 118 published peer reviewed articles, 11 specialty society or other evidence-based guidelines, 1 Cochrane systematic review, and 17 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(188); 42 CFR 419.22(229); 42 CFR 422.101(230)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 1 - Inpatient Hospital Services Covered Under Part A(231); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 6 - Hospital Services Covered Under Part B(232); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(233); CMS IOM Publication 100-08, Medicare Program Integrity Manual, Chapter 6, Section 6.5 - Medical Review of Inpatient Hospital Claims for Part A Payment(234)

Medicare Coverage Determinations: Medicare Coverage Database(235)

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Footnotes

[A] Ecthyma gangrenosum is a localized necrotic skin lesion that may be associated with bacteremia or progression of folliculitis in an immunocompromised patient. It is usually associated with *Pseudomonas aeruginosa* but may occur in the setting of bacteremia due to other Gram-negative bacilli or disseminated candidiasis.(9) [A in Context Link 1]

[B] Tumor lysis syndrome results from the rapid destruction of malignant cells and may result in the development of electrolyte derangements and renal failure.(13)(14) [B in Context Link 1]

[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, in oncologic patients, extensive involvement of the liver by tumor, tumor cell overexpression of glycolytic enzymes, or toxicity from medication (eg, nucleoside reverse transcriptase inhibitors) are also etiologies to consider along with other clinical scenarios such as vigorous exercise or seizures. Interpretation of an elevated lactate level requires consideration of the clinical context. 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.(23)(24) [C in Context Link 1]

[D] No single WBC count threshold exists for leukostasis to occur, as different types of leukemia cells cause leukostasis at widely variable cell counts.(2) [D in Context Link 1, 2]

[E] Subtypes of peripheral T-cell lymphoma include peripheral T-cell lymphoma not otherwise specified, angioimmunoblastic T-cell lymphoma, enteropathy-associated T-cell lymphoma, follicular T-cell lymphoma, monomorphic epitheliotropic intestinal T-cell lymphoma, and ALK-positive or ALK-negative anaplastic large cell lymphoma.(62)(63) [E in Context Link 1, 2]

[F] Risk may be determined with consideration of molecular markers along with cytogenetics and response to therapy.(66) [F in Context Link 1, 2]

[G] Risk may be approximated by incorporating immunophenotype, cytogenetic features, and molecular features as well as including associated considerations such as donor availability, graft vs host disease assessment, management of virus reactivation, and immune reconstitution.(70)(71)(72) [G in Context Link 1]

[H] Pediatric patients include children age 18 years or younger or adults age 30 years or younger who are treated by a pediatric oncology group.(80) [H in Context Link 1, 2]

[I] Several scoring systems are available for determining prognosis in the myelodysplastic syndromes, including the International Prognostic Scoring System, the World Health Organization Prognostic Scoring System, and the International Consensus Classification; they utilize cytogenetics, karyotype, laboratory values, and percentage of marrow blasts as variables.(87)(90) [I in Context Link 1, 2]

[J] Multiple risk stratification models are available. One prognostic tool, the Mutation-Enhanced International Prognostic Scoring System for Transplantation-Age Patients with Myelofibrosis (MIPSS-70), utilizes age, laboratory values, constitutional symptoms, and number of mutations or genotype as variables.(91) [J in Context Link 1, 2]

[K] A tandem hematopoietic cell transplant is a planned second transplant within 6 months of the first treatment.(92) [K in Context Link 1, 2]

[L] Categorization of mastocytosis and its variants may be determined with the International Consensus Classification or the World Health Organization classification; both take a combination of histopathologic, clinical, laboratory, and cytogenetic analysis into consideration. [L in Context Link 1, 2]

[M] Risk may be determined by assessment of age at diagnosis, tumor stage (localized, regional, or metastatic disease), presence of MYCN amplification, histopathology, DNA index (reflective of the amount of DNA within tumor cells), and presence of segmental chromosomal aberrations.(137) [M in Context Link 1]

[N] Stage 2 disease includes a rash involving 25% to 50% of skin, total bilirubin of 3 to 6 mg/dL (51 to 103 micromoles/L), or diarrhea of greater than 1000 mL/day (in adults).(56)(159) [N in Context Link 1]

[O] Administration of high-dose radioactive iodine may be done on an ambulatory basis in centers with experience in using high doses. If appropriate, outpatient support can be arranged.(171) [O in Context Link 1]

[P] Local radioactive element treatments, such as seed implantation for prostate cancer or bronchoscopic brachytherapy placement for lung cancer, can be carried out on an outpatient basis.(173)(174)(175) [P in Context Link 1]

[Q] Treatment with high doses of radiation or development of post radioligand therapy complications (eg, urinary retention) may require inpatient care until radiation levels are considered safe for discharge.(177) [Q in Context Link 1]

[R] Bone marrow harvesting from the posterior iliac spine is typically done with general or regional anesthesia.(182)(183) [R in Context Link 1]

[S] Palliative or formal hospice patient care may be needed on an inpatient basis for symptoms or conditions that cannot be controlled at any other level.(185)(186)(187) [S in Context Link 1]

[T] Use of myeloid growth factors can reduce the incidence, duration, and severity of febrile neutropenia.(194) [T in Context Link 1]

[U] See Intensive Care Guidelines GRG and Intermediate Care Guidelines GRG. [U in Context Link 1]

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

[W] The MASCC Risk Index and the CISNE score are validated prediction tools used to stratify febrile neutropenic adult patients into low-risk or high-risk categories.(6)(214)(215) [W in Context Link 1]

[X] Patients with chronic disease (eg, renal failure with potassium greater than 5 mEq/L (mmol/L) or liver disease with sodium less than 135 mEq/L (mmol/L)) with chronically abnormal electrolytes are often manageable on an outpatient basis.(221) [X in Context Link 1]

[Y] The calcium level should be corrected for hypoalbuminemia. An ionized calcium level may be more accurate than a total serum calcium level, especially in the setting of acidosis, renal failure, massive transfusions, or the presence of a paraprotein.(225)(226) [Y in Context Link 1]

Definitions

Abdominal status acceptable

- Abdominal status acceptable, as indicated by **ALL** of the following(1):
  - Bowel sounds present
  - No ileus, signs of obstruction, or peritonitis
  - Abdominal distention absent or manageable at next level of care

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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

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)

References

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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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Electrolyte status acceptable

- Electrolyte status acceptable, as indicated by **1 or more** of the following(1):
  - Electrolyte abnormality manageable at next level of care[A]
  - No electrolyte abnormality, as indicated by **ALL** of the following:
    - Potassium greater than 3.5 mEq/L (mmol/L) and less than 5.0 mEq/L (mmol/L)(2)
    - Sodium greater than 135 mEq/L (mmol/L) and less than 145 mEq/L (mmol/L)(3)(4)
    - Calcium[B] greater than 8.5 mg/dL (2.13 mmol/L) and less than 10.5 mg/dL (2.63 mmol/L)
    - Phosphorus greater than 2.5 mg/dL (0.81 mmol/L) and less than 5.0 mg/dL (1.62 mmol/L)(7)
    - Magnesium greater than 1.5 mEq/L (0.75 mmol/L) and less than 3.0 mEq/L (1.5 mmol/L)(7)

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7. Yu ASL. Disorders of magnesium and phosphorus. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:766-769.e1.

Footnotes

A. Patients with chronic disease (eg, renal failure with potassium greater than 5 mEq/L (mmol/L) or liver disease with sodium less than 135 mEq/L (mmol/L)) with chronically abnormal electrolytes are often manageable on an outpatient basis.(1)

B. The calcium level should be corrected for hypoalbuminemia. An ionized calcium level may be more accurate than a total serum calcium level, especially in the setting of acidosis, renal failure, massive transfusions, or the presence of a paraprotein.(5)(6)

Fever

- Fever is defined as a core[A] temperature greater than or equal to 100.4 degrees F (38 degrees C).[B](2)(3)

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1. Niven DJ, Gaudet JE, Laupland KB, Mrklas KJ, Roberts DJ, Stelfox HT. Accuracy of peripheral thermometers for estimating temperature: a systematic review and meta-analysis. Annals of Internal Medicine 2015;163(10):768-77. DOI: 10.7326/M15-1150.
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Footnotes

A. While a rectal temperature can be considered a core reading, it is not always practical. Tympanic membrane temperature is not usually considered a core reading; however, the devices that measure this temperature often are (or can be) programmed so that they automatically adjust readings to reflect a core temperature equivalent.(1)
B. There is not a universally accepted definition of fever, as various temperatures are proposed as the cutoff that constitutes a fever.

General Discharge Criteria met

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

Hematologic complications absent or stabilized

- Hematologic complications absent or stabilized, as indicated by **ALL** of the following(1)(2)(3)(4):
  - Superior vena cava syndrome absent, or evaluation and treatment appropriate for next level of care
  - Leukostasis, hyperviscosity, and microangiopathy absent, resolved, or appropriate for next level of care
  - Hemorrhage (eg, cystitis, disseminated intravascular coagulation, gastrointestinal bleeding) absent or adequately resolved

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4. Schafer AI. Approach to the patient with bleeding or thrombosis. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:1165-1170.

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)

Hemodynamic stability

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

References

1. Schriger DL. Approach to the patient with abnormal vital signs. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:32-35.
2. Ramgopal S, Sepanski RJ, Martin-Gill C. Empirically derived age-based vital signs for children in the out-of-hospital setting. Annals of Emergency Medicine 2023;81(4):402-412. DOI: 10.1016/j.annemergmed.2022.09.019.

Hypotension

- 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)

References

1. Schriger DL. Approach to the patient with abnormal vital signs. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:32-35.
2. Puskarich MA, Jones AE. Shock. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:34-41.e1.
3. Anderson CC, Kapoor S, Mark TE. Pediatric parameters and equipment. In: Anderson CC, Kapoor S, Mark TE, editors. The Harriet Lane Handbook: A Manual for Pediatric House Officers. 23rd ed. Elsevier; 2024:i-iii.

Footnotes

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

B. 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.

Hypotension absent

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

References

1. Schriger DL. Approach to the patient with abnormal vital signs. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:32-35.
2. Puskarich MA, Jones AE. Shock. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:34-41.e1.
3. Anderson CC, Kapoor S, Mark TE. Pediatric parameters and equipment. In: Anderson CC, Kapoor S, Mark TE, editors. The Harriet Lane Handbook: A Manual for Pediatric House Officers. 23rd ed. Elsevier; 2024:i-iii.

Footnotes

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

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

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.
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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.

Hypoxemia absent

- Hypoxemia absent, as indicated by **1 or more** of the following(1):
  - Arterial oxygen saturation (SpO_2) of 90% or greater or arterial partial pressure of oxygen (PaO_2) of 60 mm Hg (8.0 kPa) or greater on room air[A][B]
  - Oxygen requirements are stable and arranged for at next level of care.

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. Rojas-Camayo J, et al. Reference values for oxygen saturation from sea level to the highest human habitation in the Andes in acclimatised persons. Thorax 2018;73(8):776-778. DOI: 10.1136/thoraxjnl-2017-210598.

Footnotes

A. Specific target values (ie, 90% or 60 mm Hg (8.0 kPa)) may require adjustment when care is delivered at high altitude.(2)
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.

Intake acceptable

- Intake acceptable, as indicated by **1 or more** of the following(1):

- Oral hydration, medications, and diet
- Enteral hydration, medications, and diet
- Administration routes performable at next level of care

References

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

Neurologic status acceptable

- Neurologic status acceptable, as indicated by neurologic function and mental status being **1 or more** of the following(1)(2):
  - Normal
  - Baseline
  - Appropriate for next level of care

References

1. Lowenstein DH, Josephson SA, Hauser SL. Approach to the patient with neurologic disease. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:3277-3282.
2. Kochanek PM, Bell MJ. Neurologic emergencies and stabilization. In: Kliegman RM, et al., editors. Nelson Textbook of Pediatrics. 22nd ed. Elsevier; 2025:581-588.

No infection, or status acceptable

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

References

1. Hooper DC, Shenoy ES, Elshaboury RH. Treatment and prophylaxis of bacterial infections. In: Loscalzo J, Fauci A, Kasper D, Hauser S, Longo D, Jameson JL, editors. Harrison's Principles of Internal Medicine. 21st ed. McGraw Hill Education; 2022:1148-1163.
2. Blum FC, Biros MH. Fever in the adult patient. In: Walls RM, editor. Rosen's Emergency Medicine: Concepts and Clinical Practice. 10th ed. Elsevier; 2023:90-95.e1.
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No inpatient interventions needed

- No inpatient interventions needed; examples include:
  - Protective isolation with laminar flow
  - Radioactive implant treatment
  - Vital signs, neurologic signs, or vascular checks more often than feasible at next level of care
  - Urgent chemotherapy in unstable patient
  - Cell pheresis or apheresis in unstable patient
  - Urgent plasma, red blood cell, or platelet transfusion
  - Urgent clotting factor administration and follow-up monitoring

No neutropenia, or status acceptable

- No neutropenia, or status acceptable, as indicated by **1 or more** of the following(1)(2)(3)(4)(5):
  - No neutropenia problem
  - Neutropenia adequately resolved or stabilized, as indicated by **1 or more** of the following:
    - Afebrile
    - Absolute neutrophil count greater than 500/mm^3 (0.5 x10^9/L)
    - No high-risk findings, as indicated by **ALL** of the following:
      - Hypotension absent
      - Tachypnea absent
      - Hypoxemia absent
      - No evidence of significant focal infection (eg, cellulitis, pneumonia, tunnel infection, perirectal abscess)
      - No evidence of infection with drug-resistant organism
      - Mental status normal or at baseline
      - Heart failure absent, improved, or at baseline
      - No acute or acute-on-chronic renal failure (eg, creatinine less than or equal to 2.5 mg/dL (221 micromoles/L) or at baseline)
      - No uncontrolled arrhythmia, hypocalcemia or hypercalcemia, or hyponatremia (eg, serum sodium of 135 mEq/L (mmol/L) or less)
      - Liver function normal, at baseline, or improved
      - Multinational Association for Supportive Care in Cancer (MASCC) Risk Index score of 21 or more or Clinical Index of Stable Febrile Neutropenia (CISNE) score of 2 or less[A](5)(6) MASCC Calculator

References

1. Baden LR, et al. Prevention and Treatment of Cancer-Related Infections. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 1.2025; 2025 Jun 20 Accessed at: https://www.nccn.org/. [accessed 2025 Jun 23]
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6. Zheng B, Toarta C, Cheng W, Taljaard M, Reaume N, Perry JJ. Accuracy of the Multinational Association of Supportive Care in Cancer (MASCC) and Clinical Index of Stable Febrile Neutropenia (CISNE) scores for predicting serious complications in adult patients with febrile neutropenia: A systematic review and meta-analysis. Critical Reviews in Oncology/Hematology 2020;149:102922. DOI: 10.1016/j.critrevonc.2020.102922.

Footnotes

A. The MASCC Risk Index and the CISNE score are validated prediction tools used to stratify febrile neutropenic adult patients into low-risk or high-risk categories. (1)(5)(6)

Orthostatic hypotension

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

References

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

Footnotes

A. Concomitant measurements of the heart rate are important to measure to help diagnose subtypes of orthostatic hypotension (eg, the lack of a compensatory increase in heart rate is typical of autonomic failure and an exaggerated tachycardia may be reflective of volume depletion). However, the heart rate is not a component of the definition of orthostatic hypotension, which relies upon blood pressure alone.(1)(2)(3)
B. Criteria based upon clinician acquired numeric values (eg, vital signs, oxygen saturation) should be used if they are accurate reflections of the patient's condition. Transitory findings (eg, abnormal only upon initial emergency department intake or only one time out of multiple readings) that rapidly improve with no or minimal treatment usually do not reflect disease severity or risk for deterioration. This does not imply that an initial or one-time reading cannot ever be applicable. The goal is to separate erroneous or incidental findings from those that truly represent the patient's clinical picture.

Pain and nausea absent or adequately managed

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

- Pain and nausea managed on regimen performable at next level of care

References

1. Swarm RA, et al. Adult Cancer Pain. NCCN Clinical Practice Guidelines in Oncology [Internet] National Comprehensive Cancer Network (NCCN). v. 2.2025; 2025 May 21 Accessed at: https://www.nccn.org/. [accessed 2025 Jun 04]
2. Cohen SP. Pain. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:133-141.e1.
3. Peterson SJB, Weisman SJ. Pediatric pain management. In: Kliegman RM, et al., editors. Nelson Textbook of Pediatrics. 22nd ed. Elsevier; 2025:677-700.
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5. Fourth consensus guidelines for the management of postoperative nausea and vomiting: erratum. Anesthesia and Analgesia 2020;131(5):e241. DOI: 10.1213/ANE.0000000000005245.

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)

References

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4. Rakoczy K. Acute respiratory failure. In: Gershel JC, Rauch DA, editors. Caring for the Hospitalized Child: A Handbook of Inpatient Pediatrics. 3rd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2023:749-754.

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)

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

- 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)

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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.

Tachycardia absent

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

References

1. Schriger DL. Approach to the patient with abnormal vital signs. In: Goldman L, Cooney KA, editors. Goldman-Cecil Medicine. 27th ed. Elsevier; 2024:32-35.
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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

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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)

Tachypnea absent

- Tachypnea[A][B] absent, as indicated by **1 or more** of the following:
  - Respiratory rate less than or equal to 20 breaths per minute in adult[A][B](1)
  - Respiratory rate less than or equal to 18 breaths per minute in child 13 to 17 years of age[A][B](2)
  - Respiratory rate less than or equal to 22 breaths per minute in child 6 to 12 years of age[A][B](2)
  - Respiratory rate less than or equal to 25 breaths per minute in child 3 to 5 years of age[A][B](2)
  - Respiratory rate less than or equal to 30 breaths per minute in child 1 or 2 years of age[A][B](2)
  - Respiratory rate less than or equal to 40 breaths per minute in infant 6 to 11 months of age[A][B](2)
  - Respiratory rate less than or equal to 45 breaths per minute in infant 3 to 5 months of age[A][B](2)
  - Respiratory rate less than or equal to 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.

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Temperature status acceptable

- Temperature status acceptable, as indicated by **1 or more** of the following(1)(2)(3):
  - Temperature less than 100.5 degrees F (38.1 degrees C) (oral) and greater than 96.8 degrees F (36 degrees C) (rectal)
  - Temperature as expected for disease process and appropriate for management at next level of care

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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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