Cervical Fusion, Anterior

ORG: S-320 (ISC)
Link to Codes

MCG Health
Inpatient & Surgical Care
30th Edition

Care Planning - Inpatient Admission and Alternatives

Clinical Indications for Procedure

- Procedure is indicated for **1 or more** of the following:N N N N N N N N
  - Cervical radiculopathy and **ALL** of the following:
    - Patient has significant symptoms (eg, impacts activities or sleep) due to nerve root compression (eg, pain, weakness, numbness and tingling, difficulty with fine motor coordination, symptoms of vertebral artery compression[A]).(1)(2)
    - MRI or other neuroimaging finding correlates with clinical signs and symptoms and demonstrates spinal stenosis or nerve root compression (eg, disk abnormality, facet joint hypertrophy).(1)(2)
    - Surgery appropriate, as indicated by **1 or more** of the following:
      - Failure of 6-week trial of nonoperative treatment that includes **1 or more** of the following(1)(9):
        - NSAIDs(1)
        - Nonopioid analgesics (eg, tricyclic antidepressants, antiseizure medications)
        - Opioid analgesics
        - Cervical collar(1)
        - Physical therapy(1)
        - Epidural or oral corticosteroids(1)
      - Progressive (ie, worsening) neurologic deficit (eg, weakness)(1)
  - Spondylotic myelopathy treatment, as indicated by **ALL** of the following:
    - Signs or symptoms of myelopathy are present, as indicated by **1 or more** of the following:
      - Upper limb weakness in more than single nerve root distribution(1)(3)
      - Lower limb weakness in upper motor neuron distribution(3)(10)
      - Loss of dexterity (eg, clumsiness of hands)(1)(2)(3)(10)
      - Bowel or bladder incontinence(3)(10)
      - Hyperreflexia(1)(2)(5)
      - Hoffmann sign[B](1)(10)
      - Increased extremity muscle tone or spasticity(1)(3)(10)
      - Gait abnormality (eg, wide-based gait, stiff-leg (spastic) gait, or ataxic gait)(1)(2)(3)(10)
      - Positive Babinski sign(1)(10)

- Alternative clinical signs or symptoms of myelopathy (eg, trigeminal neuralgia, sharp pain or tingling with neck extension, symptoms of vertebral artery compression[A]) corresponding to compression level on imaging(1)(5)(11)
- MRI or other neuroimaging finding correlates with clinical signs and symptoms and demonstrates cord compression (eg, herniated disk, osteophyte, intra-axial mass, synovial cyst, epidural abscess, epidural hematoma).(1)(2)(5)(10)(12)

− Rheumatoid arthritis involving the cervical spine and **1 or more** of the following:
- Intractable neck pain or stiffness(1)(13)
- Symptoms of myelopathy or neurologic deficit attributable to cervical disease (eg, spasticity, hyperreflexia, difficulty in fine motor movements, radiculopathy, symptoms of vertebrobasilar insufficiency, Lhermitte sign[C])(1)(13)(14)

− Atlantoaxial subluxation and **1 or more** of the following(1):
- Posterior atlantodental interval of 14 mm or less[D]
- Space available for cord less than 13 mm[E]
- Compression of the spinal cord to less than 6 mm in diameter
- Cervicomedullary angle less than 135 degrees
- Dynamic instability (excessive vertebral movement between vertebrae during flexion or extension on imaging)

− Subaxial subluxation[F] and **1 or more** of the following(1):
- Sagittal spinal canal diameter of 14 mm or less
- Space available for cord less than 13 mm[E]
- Dynamic instability (excessive vertebral movement between vertebrae during flexion or extension on imaging)

- Ossification of posterior longitudinal ligament (OPLL) with associated radiculopathy, myelopathy, or OPLL occupancy ratio greater than 60%[G](15)
- Ossification of ligamentum flavum with associated myelopathy(4)(16)
- Congenital spine anomalies causing atlantoaxial instability (eg, with Down syndrome or Klippel-Feil syndrome)(1)(17)
- Degenerative cervical spondylosis with kyphosis-causing cord compression(18)
- Facet fractures with dislocation[H](19)(20)(21)
- Tumor of cervical spine causing pathologic fracture, cord compression, or instability(1)(5)(6)(22)
- Infection of cervical spine requiring decompression or debridement(5)(6)
- Congenital cervical kyphosis(23)

− Cervical pseudarthrosis and **ALL** of the following(7):
- Symptoms (eg, pain) unresponsive to nonoperative therapy(1)(7)
- Alternative etiologies of symptoms ruled out (eg, neuroimaging has ruled out adjacent compression of neural structures)(1)(7)

− Degenerative spinal segment adjacent to prior decompressive or fusion procedure with **1 or more** of the following:
- Symptomatic myelopathy corresponding clinically to adjacent level(24)(25)(26)
- Symptomatic radiculopathy corresponding clinically to adjacent level and unresponsive to nonoperative therapy(24)(25)(26)

- Posttraumatic cervical instability (eg, unstable anterior column fracture, patient with prior extensive laminectomy)(1)(8)(20)

− Need for procedure as part of treating cervical spine injury (eg, trauma), as indicated by **ALL** of the following:
- Acutely symptomatic cervical radiculopathy or myelopathy(5)(20)(27)
- MRI or other neuroimaging finding (eg, cord compression, root compression) demonstrates pathologic anatomy corresponding to symptoms.(5)(20)(27)

Alternatives to Procedure

- Alternatives include:
  - For disk herniation with radiculopathy:
    - Nonoperative treatment that includes **1 or more** of the following:
      - NSAIDs(1)
      - Nonopioid analgesics (eg, tricyclic antidepressants, antiseizure medications)
      - Opioid analgesics
      - Cervical collar(1)(10)
      - Physical therapy(1)(2)(10)
      - Traction(1)(2)(10)
      - Epidural or oral corticosteroids(1)(2)(28)
  - For ossification of posterior longitudinal ligament:
    - Neck brace(15)
    - Anti-inflammatory medication (NSAID, corticosteroid)(15)
    - Physical therapy(15)
    - Activity modification(15)
    - Posterior fusion. See Cervical Fusion, Posterior ISC guideline.(15)
  - For cervical spine injuries:
    - Cervical orthosis (cervical collar)(8)(17)(19)
    - Halo vest(8)(17)(19)(20)

- Anterior decompression without fusion (eg, diskectomy). See Cervical Diskectomy or Microdiskectomy, Foraminotomy, Laminotomy ISC guideline.(29)(30)
- Endonasal or transoral decompression(31)
- Anterior corpectomy and fusion[I](1)
- Cervical disk arthroplasty(1)(29)(32)(33)(34)
- Posterior decompression without fusion, including:
  - Foraminotomy or laminotomy. See Cervical Diskectomy or Microdiskectomy, Foraminotomy, Laminotomy ISC guideline.(1)
  - Laminoplasty(1)(10)
  - Laminectomy procedure. See Cervical Laminectomy ISC guideline.(1)
- Posterior fusion. See Cervical Fusion, Posterior ISC guideline.(1)(2)(10)
- Radiation therapy, chemotherapy, or immunotherapy for primary tumor or metastasis(5)(22)

Operative Status Criteria

Goal Length of Stay: Ambulatory

Note: The definition of an ambulatory procedure depends on payer-provider contractual agreement or regulatory language (eg, CMS' Two-Midnight Rule). An ambulatory procedure may include one postoperative overnight stay in a facility; therefore, MCG's ambulatory Goal Length of Stay (GLOS) attainment calculation reports the sum of same-day and next-day postoperative discharges. Depending on various patient and procedural factors, some patients undergoing a procedure with an ambulatory GLOS require inpatient care (eg, medical necessity for hospital-based care across 2 or more postoperative midnights). Some of these factors are described in the Extended Stay section of this guideline.

- Ambulatory
- Inpatient (eg, medical necessity for hospital-based care across 2 or more postoperative midnights)
- Inpatient (Medicare patient, and specific procedure is on CMS Inpatient Only List)

Hospitalization

Optimal Recovery Course

Day	Level of Care	Clinical Status	Activity	Routes	Interventions	Medications
1	• Social Determinants of Health Assessment • OR to recovery to discharge[J] • Discharge planning	• **Hemodynamic stability** • **Breathing comfortably** • **Voiding ability at baseline** • **Neurologic status at baseline** • **No evidence of postoperative or surgical site infection** • **No evidence of vascular compromise** • **Pain absent or managed** • **Discharge plans and education understood**	• **Ambulatory or acceptable for next level of care**	• **Oral hydration[K]** • **Oral medications or regimen acceptable for next level of care** • **Oral diet or acceptable for next level of care**	• Rigid cervical orthosis	• **PCA absent[L]** • Corticosteroids absent or outpatient treatment arranged

(1)(20)(35)(36)(37)(38)NIH

Recovery Milestones are indicated in **bold**.

Goal Length of Stay: Ambulatory

Note: Goal Length of Stay assumes optimal recovery, decision making, and care. Patients may be discharged to a lower level of care (either later than or sooner than the goal) when it is appropriate for their clinical status and care needs.

Extended Stay

Minimal (a few hours to 1 day), Brief (1 to 3 days), Moderate (4 to 7 days), and Prolonged (more than 7 days).

- Inpatient stay (eg, need for hospital-based care beyond postoperative day 1) may be needed for(40):
  - Failure to meet discharge criteria (recovery milestones in Optimal Recovery Course)
    - Expect brief stay extension.
  - Severe deficit or injury(1)(41)(42)
    - Patient with significant neurologic compromise, cervical injury, or multiple injuries will require longer acute care and recovery times.
    - Stay extension varies depending on injury.
  - Need for surgery due to infection or neoplasm(43)
    - Expect brief to moderate stay extension.
  - Extensive surgery (eg, corpectomy, extensive dissection)(44)
    - Expect brief stay extension.
  - Active comorbidities (eg, heart failure, COPD, cerebral palsy, malnutrition)(45)(46)
    - Anticipate treatment of specific comorbidity.
    - Expect brief stay extension.
  - Complications of procedure(10)(47)(48)
    - Dysphagia(1)
      - Expect brief stay extension.
    - Postoperative hematoma requiring surgical intervention(1)
      - Expect brief to moderate stay extension.
    - Dural tear or CSF fistula
      - Dural tear or CSF fistula may require surgical repair.
      - Expect brief to moderate stay extension.
    - Esophageal perforation
      - Esophageal perforation requires surgical repair.
      - Expect moderate to prolonged stay extension.
    - Vertebral artery injury(49)
      - Vertebral artery injury requires surgical repair, stent placement, or (if adequate collateral flow is present) ligation or embolization.
      - Anticipate ICU monitoring and postrepair imaging.
      - Expect brief to moderate stay extension.
    - C5 nerve palsy
      - Expect brief stay extension.
    - Postoperative airway compromise(1)
      - Expect brief stay extension.
    - Urinary retention(50)
      - Expect brief stay extension.
    - Vocal cord paresis or paralysis(1)
      - Expect brief stay extension.
    - In-hospital fall(51)
      - Expect brief stay extension.

See Common Complications and Conditions ISC for further information.

Discharge

Discharge Planning

- Discharge planning includes[M]:
  - Assessment of needs and planning for care, including(53)(54):
    - Develop and modify treatment plan (involving multiple providers) as needed.
    - Evaluate and address preadmission functioning as needed.
    - Evaluate and address psychosocial status issues as indicated. See Psychosocial Assessment SR for further information.
    - Evaluate and address social determinants of health (eg, housing, food). See Social Determinants of Health Screening Tool SR for further information.
    - Evaluate and address patient or caregiver preferences as indicated.
    - Identify skilled services needed at next level of care, with specific attention to:

- Cast or immobilizer care(20)
- Neurologic status assessment(55)
- Pain management(56)(57)
- Rehabilitation therapy or equipment coordination(58)
- Wound or dressing management(59)

- Early identification of anticipated discharge destination; options include(54)(60):
  - Home; considerations include:
    - Home safety assessment. See Home Safety Assessment SR for further information.
    - Patient safe to go home; examples include(61)(62)(63):
      - Medical status stable for patient's condition
      - Functional care can safely be provided with available resources.
      - Mental status stable for patient's condition
      - Medication availability confirmed and reconciliation complete
      - Patient/caregiver education completed with written discharge instructions provided
      - Community resources identified and referrals made, as needed
      - Home care arranged, if indicated
      - Necessary medical equipment delivery arranged or available in home, if indicated
      - Necessary medical supplies ordered, or patient/caregiver can obtain, if indicated
    - Access to follow-up care
    - Self-management ability if appropriate. See Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) Assessment SR for further information.
    - Caregiver need, ability, and availability
  - Post-acute skilled care or custodial care as indicated. See Discharge Planning Tool SR for further information.
- Transitions of care plan complete, including(54)(60)(64):
  - Patient and caregiver education complete.
    - See Teach-Back Tool SR for further information.
    - See Cervical Fusion, Anterior: Patient Education for Clinicians SR for further information.
  - Medication reconciliation completion includes(65)(66):
    - Compare patient's discharge list of medications (prescribed and over-the-counter) against provider's admission or transfer orders.
    - Assess each medication for correlation to disease state or medical condition.
    - Report medication discrepancies to prescribing provider, attending physician, and primary care provider, and ensure accurate medication order is identified.
    - Provide reconciled medication list to all treating providers.
    - Confirm that patient or caregiver can acquire medication.
    - Educate patient and caregiver.
      - Provide complete medication list to patient and caregiver.
      - Importance of presenting personal medication list to all providers at each care transition, including all provider appointments
      - Reason, dosage, and timing of medication (eg, use "teach-back" techniques)(67)
    - Encourage communication between patient, caregiver, and pharmacy for obtaining prescriptions, setting up home medication delivery, and reviewing for drug-drug interactions.
    - See Medication Reconciliation Tool SR for further information.
  - Plan communicated to patient, caregiver, and all members of care team, including(68):
    - Inpatient care and service providers
    - Primary care provider
    - All post-discharge care and service providers
  - Appointments planned or scheduled, which may include:
    - Primary care provider(69)
    - Neurologist
    - Neurosurgeon(1)
    - Orthopedic surgeon(1)
    - Rehabilitation therapy services(58)
    - Specialists for management of comorbidities as needed(6)
    - Other
  - Outpatient testing and procedure plans made, which may include:
    - Bone densitometry(55)
    - Other
  - Referrals made for assistance or support, which may include:
    - Financial, for follow-up care, medication, and transportation(70)

- Tobacco use treatment(71)
- Vocational rehabilitation(55)
- Other

- Medical equipment and supplies coordinated (ie, delivered or delivery confirmed), which may include:
  - Rigid cervical orthosis(72)(73)
  - Wound care equipment and supplies(74)
  - Other

Discharge Destination

- Post-hospital levels of admission may include:
  - Home.
  - Home healthcare. See Home Care Indications for Admission Section HC in Cervical Spine Surgery guideline in Home Care.
  - Recovery facility care. See Recovery Facility Care Indications for Admission Section RFC in Cervical Spine Surgery guideline in Recovery Facility Care.

Evidence Summary

Criteria

The evidence for the clinical indications found in this guideline includes 20 published peer reviewed articles and 6 book sections.

For cervical radiculopathy, an orthopedic surgery textbook and a narrative review support operative treatment, such as anterior cervical fusion, in patients with progressive neurologic deficit (eg, weakness) or significant pain that affects daily activities and has not responded to nonoperative treatment.(1)(2) **(EG 2)**

For spondylotic myelopathy with symptoms (eg, loss of dexterity, frequent falls, hyperreflexia, Hoffmann sign, positive Babinski sign, gait abnormality), an orthopedic surgery textbook and a narrative review support operative treatment, such as anterior cervical fusion, in patients with neuroimaging findings correlating with those symptoms.(1)(2) **(EG 2)** A narrative review states that patients with moderate or severe cervical myelopathy should be managed with surgical intervention, as these patients are less likely to respond to nonoperative therapy.(3) **(EG 2)**

For spinal cord compression with myelopathy due to an ossified ligamentum flavum, a narrative review states that decompression with possible fusion should be performed.(4) **(EG 2)**

In patients with rheumatoid arthritis of the cervical spine, an orthopedic surgery textbook supports surgical intervention in patients with persistent pain, neurologic symptoms or deficits, or with subluxation of the cervical vertebrae with specific radiographic features.(1) **(EG 2)**

For cervical spine tumors or infections causing cord compression or instability, a narrative review supports operative management, such as anterior cervical fusion, to stabilize the spinal column.(5) **(EG 2)** An orthopedic surgery textbook supports operative management with anterior cervical fusion for tumors causing significant spinal instability or progressive neurologic compression.(6) **(EG 2)**

For cervical pseudarthrosis, a narrative review notes that anterior cervical fusion is an appropriate treatment if the patient's symptoms have been unresponsive to nonoperative therapy and alternative etiologies for the symptoms have been ruled out.(7) **(EG 2)**

For cervical spinal cord injury (eg, trauma), a narrative review supports the use of anterior cervical fusion as part of the surgical management of acutely symptomatic patients with neuroimaging findings that correspond to symptoms.(5) **(EG 2)**

For cervical odontoid fractures, a meta-analysis of 40 retrospective case series and one prospective cohort study, encompassing 2099 patients with odontoid fractures and treated with surgical (anterior or posterior) fusion or nonoperative therapy (cervical collar or halo), found higher rates of fracture union (72.7% vs 40.2%) and fracture stability (82.6% vs 70.1%) following surgical fusion; however, the differences in visual analog scale (VAS) pain scores (1.53 vs 0.73) and Neck Disability Index (NDI) (14.2 vs 16.0) were below the minimal clinically important differences of 1.0 for VAS and 7.5 for NDI.(8) **(EG 2)** In the same study, meta-regression analysis also showed significantly more fracture union in the surgical group after adjustment for age and fracture type.(8) **(EG 2)**

Hospitalization

A double-blind randomized placebo-controlled trial comparing receipt of topical steroid vs no topical steroid in the retroesophageal space prior to surgical closure (109 patients) found that the topical application of steroid resulted in significantly decreased severity of postoperative dysphagia both immediately after the procedure and 1 month postoperatively.(39) **(EG 1)**

Length of Stay

Analysis of 2208 patients (mean age 49 years) undergoing anterior cervical diskectomy and fusion (ACDF) from the Michigan Spine Surgery Improvement Collaborative database found that 75% of patients were discharged within 1 day.(35) **(EG 2)** Review of a national quality improvement database of patients undergoing ACDF (19,283 patients, median age 54 years) found that 75% of patients were discharged within 1 day.(36) **(EG 2)** Analysis of 139,175 patients undergoing cervical spine fusion at a non-high-volume hospital (fewer than 173 cases per year) found that 60% were discharged in 1 day or less; in the same study, analysis of 6155 patients undergoing cervical spine fusion at a high-volume hospital found that 74% were discharged in 1 day or less.(37) **(EG 2)** Analysis of procedure data for a commercially insured population shows 86% of patients undergoing anterior cervical fusion were discharged the day of or the day after surgery.(38) **(EG 3)** Analysis of procedure data for a Medicare-insured population shows 71% of patients undergoing anterior cervical fusion were discharged the day of or the day after surgery.(38) **(EG 3)**

Rationale

Use of this MCG care guideline helps the clinician identify, for a given procedure, which patient-specific factors and clinical conditions are appropriate for that procedure. The evidence-based clinical criteria assist the clinician in the decision to appropriately perform a procedure, evaluating whether the potential benefits of a procedure outweigh the potential risks. For Medicare enrollees, surgical MCG care guidelines also identify which procedures CMS has designated as inpatient only.

Use of these evidence-based clinical criteria to support decision making around the need for a given procedure is of benefit to the patient, as all procedures come with inherent risk that must be balanced by anticipated clinical benefit. Utilizing evidence-based clinical criteria enables a more accurate and patient-specific decision-making process. In addition, the use of evidence-based guidelines can help reduce unwarranted variation in care, such as divergent clinical thresholds to perform a procedure for clinically similar patients that vary across geographic regions, between facilities, and among individual clinicians.

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(75); 42 CFR 419.22(76); 42 CFR 422.101(77)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 1 - Inpatient Hospital Services Covered Under Part A(78); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 6 - Hospital Services Covered Under Part B(79); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(80); CMS IOM Publication 100-08, Medicare Program Integrity Manual, Chapter 6, Section 6.5 - Medical Review of Inpatient Hospital Claims for Part A Payment(81)

Medicare Coverage Determinations: Medicare Coverage Database(82)

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Footnotes

[A] Symptoms of vertebral artery compression include light-headedness, vertigo, tinnitus, intermittent blurry vision, and/or episodic retro-ocular pain.(1) [A in Context Link 1, 2]

[B] Hoffmann sign is involuntary flexion of the thumb or index finger when the examiner flexes the terminal phalanx of the third (long) finger.(3) [B in Context Link 1]

[C] Lhermitte sign, which is caused by compression of the greater and lesser occipital nerves, is characterized by a shooting electrical sensation running down the back of the neck when the neck is flexed.(14) [C in Context Link 1]

[D] The posterior atlantodental interval is defined as the distance between the dens and the posterior arch of C1.(14) [D in Context Link 1]

[E] The space available for the spinal cord is calculated by subtracting the sagittal spinal cord diameter from the sagittal spinal canal diameter and is an indicator of the degree of spinal stenosis. [E in Context Link 1, 2]

[F] Subaxial subluxation mainly affects C3 through C7 and is diagnosed when a vertebra moves forward by at least 3 mm toward the lower adjacent vertebra.(14) [F in Context Link 1, 2]

[G] The ossification of posterior longitudinal ligament (OPLL) occupancy ratio is the ratio of the anterior to posterior width of the OPLL compared with the width of the spinal canal. A narrative review reports that 100% of patients with an OPLL occupancy ratio greater than 60% developed myopathy.(15) [G in Context Link 1]

[H] Bilateral facet dislocations, if able to be reduced by closed means, can be stabilized either by anterior or posterior cervical fusion. In patients with bilateral locked facets or a facet dislocation that is irreducible, a posterior approach should be performed to open reduce

the facet dislocation.(19) [H in Context Link 1]

[I] Corpectomy refers to the removal of all or a substantial portion of the vertebral body and includes removal of the disks above and below the vertebral body.(1)(17) [I in Context Link 1]

[J] See Ambulatory Surgery Discharge and Complications: Common Complications and Conditions ISC for further information. [J in Context Link 1]

[K] Some patients may have their hydration needs met via alternative means (eg, percutaneous endoscopic gastrostomy tube). [K in Context Link 1]

[L] Use Multimodal analgesia or individual analgesic agent as indicated. [L in Context Link 1]

[M] Discharge instructions should be given in the patient's and caregiver's native language using trained language interpreters whenever possible.(52) [M in Context Link 1]

Definitions

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)

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Hypotension absent

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

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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.

Multimodal analgesia

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

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Orthostatic hypotension

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

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Footnotes

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

Social Determinants of Health Assessment

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

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

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Tachycardia absent

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

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Footnotes

A. Criteria based upon clinician acquired numeric values (eg, vital signs, oxygen saturation) should be used if they are accurate reflections of the patient's condition. Transitory findings (eg, abnormal only upon initial emergency department intake or only one time out of multiple readings) that rapidly improve with no or minimal treatment usually do not reflect disease severity or risk for deterioration. This does not imply that an initial or one-time reading cannot ever be applicable. The goal is to separate erroneous or incidental findings from those that truly represent the patient's clinical picture.
B. Interpretation of heart rate requires clinical judgment and consideration of several patient-specific factors, such as the patient's baseline heart rate, medications, and clinical impact. For example, an elderly patient on a beta-blocker medication with a baseline resting heart rate of 60 beats per minute may be clinically tachycardic at a heart rate of 94 beats per minute. Likewise, a patient who is upset, in pain, or nervous in the emergency department with a heart rate of 106 beats per minute may meet the technical definition of tachycardia, but this tachycardia (absent associated findings such as chest pain or hypotension) may not be clinically important. The numeric values included in this definition are provided to allow for consistency in terms of a technical definition of the term tachycardia. Whether a heart rate above or below the technical threshold is clinically meaningful is a matter of persistence, context, and clinical judgment.

Codes

ICD-10 Diagnosis: M43.01, M43.02, M43.03, M43.11, M43.12, M43.13, M46.21, M46.22, M46.23, M46.31, M46.32, M46.33, M46.41, M46.42, M46.43, M46.51, M46.52, M46.53, M47.011, M47.012, M47.013, M47.021, M47.022, M47.11, M47.12, M47.13, M47.21, M47.22, M47.23, M47.811, M47.812, M47.813, M47.891, M47.892, M47.893, M48.01, M48.02, M48.03, M48.51XA, M48.51XS, M48.52XA, M48.52XS, M48.53XA, M48.53XS, M50.00, M50.01, M50.020, M50.021, M50.022, M50.023, M50.03, M50.10, M50.11, M50.120, M50.121, M50.122, M50.123, M50.13, M50.20, M50.21, M50.220, M50.221, M50.222, M50.223, M50.23, M50.30, M50.31, M50.320, M50.321, M50.322, M50.323, M50.33, M50.80, M50.81, M50.820, M50.821, M50.822, M50.823, M50.83, M50.90, M50.91, M50.920, M50.921, M50.922, M50.923, M50.93, M54.11, M54.12, M54.13, M80.08XA, M80.88XA, M84.58XA, M96.1, M99.10, M99.11, M99.20, M99.21, M99.30, M99.31, M99.40, M99.41, M99.50, M99.51, M99.60, M99.61, M99.70, M99.71, Q76.2, S13.0XXA, S13.100A, S13.101A, S13.110A, S13.111A, S13.120A, S13.121A, S13.130A, S13.131A, S13.140A, S13.141A, S13.150A, S13.151A, S13.160A, S13.161A, S13.170A, S13.171A, S13.180A, S13.181A, S13.20XA, S13.29XA, S14.101A, S14.102A, S14.103A, S14.104A, S14.105A, S14.106A, S14.107A, S14.108A, S14.109A, S14.131A, S14.132A, S14.133A, S14.134A, S14.135A, S14.136A, S14.137A, S14.138A, S14.139A, S14.151A, S14.152A, S14.153A, S14.154A, S14.155A, S14.156A, S14.157A, S14.158A, S14.159A [Hide]

ICD-10 Procedure: 0RG0070, 0RG00A0, 0RG00J0, 0RG00K0, 0RG0370, 0RG03A0, 0RG03J0, 0RG03K0, 0RG0470, 0RG04A0, 0RG04J0, 0RG04K0, 0RG1070, 0RG10A0, 0RG10J0, 0RG10K0, 0RG1370, 0RG13A0, 0RG13J0, 0RG13K0, 0RG2070, 0RG20A0, 0RG20J0, 0RG20K0, 0RG2370, 0RG23A0, 0RG23J0, 0RG23K0, 0RG4070, 0RG40A0, 0RG40J0, 0RG40K0, 0RG4370, 0RG43A0, 0RG43J0, 0RG43K0, 0RG4470, 0RG44A0, 0RG44J0, 0RG44K0, XRG10RB, XRG13RB, XRG14RB, XRG20RB, XRG23RB, XRG24RB, XRG40RB, XRG43RB, XRG44RB [Hide]

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