

Tilt Table Testing

ACG: A-0124 (AC)
[Link to Codes](#)

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Clinical Indications

- Tilt table testing may be indicated when **ALL** of the following are present(1)(2)(3)(4)(5):
 - Syncope, historical or recurrent,[A] as indicated by **1 or more** of the following(14):[\[B\]](#)
 - Carotid sinus hypersensitivity, suspected(24)
 - Convulsive syncope, and need to distinguish from epilepsy
 - Delayed orthostatic hypotension, suspected[B](25)
 - Need for evaluation before patient returns to high-risk work (eg, commercial driving, roofing) or leisure activity
 - Neurally mediated syncope, suspected (including vasovagal, carotid sinus, or situational syncope)(6)(26)(27)
 - Postural orthostatic tachycardia syndrome, suspected[C](6)(27)(28)(31)
 - Psychogenic pseudosyncope, suspected[D]
 - Cardiac causes of syncope have been excluded by cardiac tests.(32)
 - Comorbid conditions that may contribute to syncope have been diagnosed and treated (eg, gastrointestinal bleeding, anemia).(33)
 - Medications that may contribute to syncope have been adjusted or discontinued (eg, diuretics, antiarrhythmics, antidepressants, antihistamines).(33)(34)

Alternatives

- Alternatives include(1)(7)(35)(36):
 - Ambulatory blood pressure monitoring. See Ambulatory Blood Pressure Monitoring, 24-Hour [\[B\]](#) AC for further information.(37)
 - Holter monitor. See Holter Monitor [\[B\]](#) AC for further information.
 - Implantable loop recorder. See Loop Recorder (Cardiac Event Monitor), Implantable [\[B\]](#) AC for further information.(38)
 - Non-implantable loop recorder. See Loop Recorder (Cardiac Event Monitor), Non-Implantable [\[B\]](#) AC for further information.
 - Patch-type cardiac monitor. See Patch-Type Cardiac Monitor [\[B\]](#) AC for further information.

Evidence Summary

Background

The tilt table test is used to identify patients with neurally mediated syncope by producing a vasodepressor and/or cardioinhibitory response. Patients are positioned on a table in the supine position and then tilted upright to 60 to 80 degrees for a period of 20 to 45 minutes, or longer if necessary. A positive response is defined as inducible presyncope or syncope associated with hypotension. Isoproterenol or nitroglycerin, as a bolus or infusion, may be used to provoke syncope in patients whose initial tilt table test result was nondiagnostic or to shorten the overall time of the test; however, the specificity of tilt table testing decreases significantly when provocative agents are used.(1)(6)(7)(8) **(EG 2)** Contraindications include critical valvular stenosis and left ventricular outflow tract obstruction, and severe proximal cerebral or coronary artery disease.(9)(10)(11) **(EG 2)** In patients with ischemic heart disease, the use of isoproterenol is contraindicated.(6)(12) **(EG 2)**

Criteria

The evidence for the clinical indications found in this guideline includes 30 published peer reviewed articles, 3 specialty society or other evidence-based guidelines, and 1 book section.

For syncope, evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care. **(RG A2)** Tilt table testing can be useful in cases of orthostatic hypotension, postural orthostatic tachycardia syndrome, supine hypertension, carotid sinus syncope, psychogenic syncope, and exclusion of epilepsy.(6)(10)(11)(15)(16) **(EG 2)** A systematic review and meta-analysis of 55 studies (encompassing 4361 patients and 1791 controls) concluded that head-up tilt table testing demonstrated a high overall performance for diagnosing vasovagal syncope. Overall, head-up tilt table testing was found to have sensitivity of 59% and specificity of 91%.(17) **(EG 1)** In a prospective observational study of 290 consecutive elderly patients referred for tilt table and carotid sinus massage testing due to a history of syncope or unexplained falls, researchers found that testing was significantly more likely to be positive in patients older than 80 years, with carotid sinus syndrome being the most common explanatory diagnosis.(18) **(EG 2)** A retrospective chart review of 107 patients with refractory epilepsy found that head-up tilt table testing was able to identify a misdiagnosis of epilepsy in 33% of patients, and 21% of patients had a dual diagnosis of neurocardiogenic syncope and epilepsy.(19) **(EG 2)** A specialty society guideline notes that, while tilt table testing has acceptable sensitivity and specificity in patients with true vasovagal syncope or without a history of syncope, tilt table testing often does not prove to be decisive when evaluating syncope of uncertain cause.(6) **(EG 2)** In patients with a negative cardiac evaluation (ie, with a structurally normal heart and no evidence of ischemia), performance of tilt table testing may contribute little to the establishment of a definitive diagnosis given the high pretest probability of neurocardiogenic syncope; even a negative tilt table test will not invalidate neurocardiogenic syncope as the most likely explanation for the patient's symptoms.(1)(6) **(EG 2)** In addition, the prognostic value of a positive tilt table test is uncertain; a long-term follow-up study of 107 patients who underwent a head-up tilt table test found that recurrence of neurocardiogenic syncope did not differ significantly between those with a positive and those with a negative tilt table test.(20) **(EG 2)** A specialty society guideline states that tilt table testing can be useful in patients with suspected vasovagal syncope or suspected delayed orthostatic hypotension if the diagnosis is unclear after initial evaluation; the utility of tilt table testing is highest in such patients when syncope is recurrent.(1) **(EG 2)** Tilt table testing has been safely performed in children for evaluation of syncope, but the prognostic value of the results is unclear, as the recurrence rate appears to be the same regardless of test outcome.(21) **(EG 2)** Data on the use and effectiveness of tilt table testing in children are limited.(22)(23) **(EG 2)**

Rationale

Use of this MCG care guideline helps the clinician determine if a particular treatment, medication, or service might be appropriate for a specific patient, taking into account their unique health complexities.

Use of these evidence-based clinical criteria to support decision making benefits the patient by identifying patient-specific complex clinical factors and conditions, promoting personalized treatment. Utilizing evidence-based clinical criteria promotes patient safety by helping ensure that potential patient benefits outweigh the risks. In addition, the use of evidence-based guidelines can increase consistency in treatment thresholds, leading to less variation in care and promoting equitable treatment among patients.

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 419.22(39); 42 CFR 422.101(40)

Internet-Only Manual (IOM) Citations: CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 14 - Medical Devices(41); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 15 - Covered Medical and Other Health Services(42); CMS IOM Publication 100-02, Medicare Benefit Policy Manual, Chapter 16 - General Exclusions from Coverage(43)

Medicare Coverage Determinations: Medicare Coverage Database(44)

References

1. Shen WK, et al. 2017 ACC/AHA/HRS guideline for the evaluation and management of patients with syncope: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines, and the Heart Rhythm Society. *Circulation* 2017;136(5):e60-e122. DOI: 10.1161/CIR.0000000000000499. (Reaffirmed 2025 Jul) [Context Link 1, 2, 3, 4, 5, 6, 7] View abstract...

2. Cheshire WP, Goldstein DS. Autonomic uprising: the tilt table test in autonomic medicine. *Clinical Autonomic Research* 2019;29(2):215-230. DOI: 10.1007/s10286-019-00598-9. [Context Link 1] View abstract...
3. Thijs RD, et al. Recommendations for tilt table testing and other provocative cardiovascular autonomic tests in conditions that may cause transient loss of consciousness : Consensus statement of the European Federation of Autonomic Societies (EFAS) endorsed by the American Autonomic Society (AAS) and the European Academy of Neurology (EAN). *Autonomic Neuroscience* 2021;233:102792. DOI: 10.1016/j.autneu.2021.102792. [Context Link 1, 2, 3] View abstract...
4. White L, Jones HT, Davies A. What is a tilt table test and why is it performed during the investigation of syncope? *British Journal of Hospital Medicine* 2021;82(10):1-7. DOI: 10.12968/hmed.2020.0462. [Context Link 1, 2] View abstract...
5. Hovaguimian A. Dysautonomia: diagnosis and management. *Neurologic Clinics* 2023;41(1):193-213. DOI: 10.1016/j.ncl.2022.08.002. [Context Link 1] View abstract...
6. Brignole M, et al. 2018 ESC guidelines for the diagnosis and management of syncope. *European Heart Journal* 2018;39(21):1883-1946. DOI: 10.1093/eurheartj/ehy037. (Reaffirmed 2025 Jul) [Context Link 1, 2, 3, 4, 5, 6, 7, 8] View abstract...
7. Curtis AB, Tomaselli GF. Approach to the patient with cardiac arrhythmias. 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; 2022:1145-1162.e7. [Context Link 1, 2]
8. Illigens BMW, Gibbons CH. Autonomic testing, methods and techniques. *Handbook of Clinical Neurology* 2019;160:419-433. DOI: 10.1016/B978-0-444-64032-1.00028-X. [Context Link 1] View abstract...
9. Parry SW, et al. The Newcastle protocols 2008: an update on head-up tilt table testing and the management of vasovagal syncope and related disorders. *Heart* 2009;95(5):416-420. DOI: 10.1136/hrt.2007.136457. [Context Link 1] View abstract...
10. Palaniswamy C, Aronow WS, Agrawal N, Balasubramaniam N, Lakshmanadoss U. Syncope: approaches to diagnosis and management. *American Journal of Therapeutics* 2016;23(1):e208-e217. DOI: 10.1097/MJT.0b013e318256ed0f. [Context Link 1, 2] View abstract...
11. Aponte-Becerra L, Novak P. Tilt test: a review. *Journal of Clinical Neurophysiology* 2021;38(4):279-286. DOI: 10.1097/WNP.0000000000000625. [Context Link 1, 2] View abstract...
12. Sutton R, Brignole M, Benditt D, Moya A. The diagnosis and management of syncope. *Current Hypertension Reports* 2010;12(5):316-322. DOI: 10.1007/s11906-010-0144-0. [Context Link 1] View abstract...
13. Fisher JD. Advances in syncope: with emphasis on reflex syncope. *Journal of Interventional Cardiac Electrophysiology* 2011;32(3):187-193. DOI: 10.1007/s10840-011-9579-8. [Context Link 1] View abstract...
14. Cheshire WP, et al. Electrodiagnostic assessment of the autonomic nervous system: A consensus statement endorsed by the American Autonomic Society, American Academy of Neurology, and the International Federation of Clinical Neurophysiology. *Clinical Neurophysiology* 2021;132(2):666-682. DOI: 10.1016/j.clinph.2020.11.024. [Context Link 1, 2] View abstract...
15. Fanciulli A, et al. Supine hypertension in Parkinson's disease and multiple system atrophy. *Clinical Autonomic Research* 2016;26(2):97-105. DOI: 10.1007/s10286-015-0336-4. [Context Link 1] View abstract...
16. Saal DP, Thijs RD, van Dijk JG. Tilt table testing in neurology and clinical neurophysiology. *Clinical Neurophysiology* 2016;127(2):1022-1030. DOI: 10.1016/j.clinph.2015.07.037. [Context Link 1] View abstract...
17. Forleo C, et al. Head-up tilt testing for diagnosing vasovagal syncope: a meta-analysis. *International Journal of Cardiology* 2013;168(1):27-35. DOI: 10.1016/j.ijcard.2012.09.023. [Context Link 1] View abstract...
18. Paling D, Vilches-Moraga A, Akram Q, Atkinson O, Staniland J, Paredes-Galan E. Carotid sinus syndrome is common in very elderly patients undergoing tilt table testing and carotid sinus massage because of syncope or unexplained falls. *Aging Clinical and Experimental Research* 2011;23(4):304-308. [Context Link 1] View abstract...
19. Rangel I, et al. The usefulness of the head-up tilt test in patients with suspected epilepsy. *Seizure* 2014;23(5):367-370. DOI: 10.1016/j.seizure.2014.02.004. [Context Link 1] View abstract...
20. Domenichini G, et al. Long-term follow-up of patients with syncope evaluated by head-up tilt test. *Annals of Noninvasive Electrocardiology* 2010;15(2):101-106. DOI: 10.1111/j.1542-474X.2010.00349.x. [Context Link 1] View abstract...
21. Lai WT, Chen MR, Lin SM, Hwang HK. Application of head-up tilt table testing in children. *Journal of the Formosan Medical Association* 2010;109(9):641-646. DOI: 10.1016/S0929-6646(10)60104-0. [Context Link 1] View abstract...
22. Dietz S, Murfitt J, Florence L, Thakker P, Whitehouse WP. Head-up tilt testing in children and young people: a retrospective observational study. *Journal of Paediatrics and Child Health* 2011;47(5):292-298. DOI: 10.1111/j.1440-1754.2010.01951.x. [Context Link 1] View abstract...
23. Kanjwal K, Calkins H. Syncope in children and adolescents. *Cardiology Clinics* 2015;33(3):397-409. DOI: 10.1016/j.ccl.2015.04.008. [Context Link 1] View abstract...
24. Shinohara T, et al. Cardiac autonomic dysfunction in patients with head-up tilt test-induced vasovagal syncope. *Pacing and Clinical Electrophysiology* 2014;37(12):1694-1701. DOI: 10.1111/pace.12484. [Context Link 1] View abstract...
25. Gibbons CH, Freeman R. Delayed orthostatic hypotension. *Autonomic Neuroscience* 2020;229:102724. DOI: 10.1016/j.autneu.2020.102724. [Context Link 1, 2] View abstract...
26. Angus S. The cost-effective evaluation of syncope. *Medical Clinics of North America* 2016;100(5):1019-1032. DOI: 10.1016/j.mcna.2016.04.010. [Context Link 1] View abstract...
27. Chow KE, Dhyani R, Chelmsky TC. Basic tests of autonomic function. *Journal of Clinical Neurophysiology* 2021;38(4):252-261. DOI: 10.1097/WNP.0000000000000789. [Context Link 1, 2, 3] View abstract...
28. Arnold AC, Ng J, Raj SR. Postural tachycardia syndrome - Diagnosis, physiology, and prognosis. *Autonomic Neuroscience* 2018;215:3-11. DOI: 10.1016/j.autneu.2018.02.005. [Context Link 1, 2] View abstract...

29. Zheng X, Chen Y, Du J. Recent advances in the understanding of the mechanisms underlying postural tachycardia syndrome in children: practical implications for treatment. *Cardiology in the Young* 2017;27(3):413-417. DOI: 10.1017/S1047951116002559. [Context Link 1] View abstract...
30. Stewart JM, et al. Pediatric disorders of orthostatic intolerance. *Pediatrics* 2018;141(1):e20171673. DOI: 10.1542/peds.2017-1673. [Context Link 1] View abstract...
31. Plash WB, et al. Diagnosing postural tachycardia syndrome: comparison of tilt testing compared with standing haemodynamics. *Clinical Science* 2013;124(2):109-114. DOI: 10.1042/CS20120276. [Context Link 1] View abstract...
32. Bennett AJ, Levine BD. The argument against tilt table testing in the geriatric population. *Journal of the American Geriatrics Society* 2022;70(11):3293-3295. DOI: 10.1111/jgs.18053. [Context Link 1] View abstract...
33. Kim MJ, Farrell J. Orthostatic hypotension: a practical approach. *American Family Physician* 2022;105(1):39-49. [Context Link 1, 2] View abstract...
34. Page RL, et al. 2015 ACC/AHA/HRS guideline for the management of adult patients with supraventricular tachycardia: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Circulation* 2015;133(14):e506-e574. DOI: 10.1161/CIR.0000000000000311. (Reaffirmed 2025 Jun) [Context Link 1] View abstract...
35. Sandhu RK, et al. Canadian Cardiovascular Society clinical practice update on the assessment and management of syncope. *Canadian Journal of Cardiology* 2020;36(8):1167-1177. DOI: 10.1016/j.cjca.2019.12.023. (Reaffirmed 2025 Jul) [Context Link 1] View abstract...
36. Love CJ. Current guidelines and clinical practice. *Cardiac Electrophysiology Clinics* 2021;13(3):459-471. DOI: 10.1016/j.ccep.2021.05.003. [Context Link 1] View abstract...
37. Jordan J, Ricci F, Hoffmann F, Hamrefors V, Fedorowski A. Orthostatic hypertension: critical appraisal of an overlooked condition. *Hypertension* 2020;75(5):1151-1158. DOI: 10.1161/HYPERTENSIONAHA.120.14340. [Context Link 1] View abstract...
38. Sheldon R. Tilt table testing and implantable loop recorders for syncope. *Cardiology Clinics* 2013;31(1):67-74. DOI: 10.1016/j.ccl.2012.10.009. [Context Link 1] View abstract...
39. Centers for Medicare and Medicaid Services. "Hospital services excluded from payment under the hospital outpatient prospective payment system." 42 CFR 419.22 Washington, DC 2023 Jul [accessed 2025 Jul 22] Accessed at: <https://www.ecfr.gov/>. [Context Link 1]
40. Centers for Medicare and Medicaid Services. "Requirements relating to basic benefits." 42 CFR 422.101 Washington, DC 2025 Jun 03 [accessed 2025 Jul 23] Accessed at: <https://www.ecfr.gov/>. [Context Link 1]
41. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 14 - Medical Devices Rev. 198 [Internet] Centers for Medicare and Medicaid Services. 2014 Nov 06 Accessed at: <https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/>. [accessed 2025 Sep 09] [Context Link 1]
42. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 15 - Covered Medical and Other Health Services Rev. 13108 [Internet] Centers for Medicare and Medicaid Services. 2025 Apr 11 Accessed at: <https://www.cms.gov/manuals/>. [accessed 2025 Sep 09] [Context Link 1]
43. Centers for Medicare and Medicaid Services. Medicare Benefit Policy Manual. Chapter 16 - General Exclusions From Coverage Rev. 198 [Internet] Centers for Medicare and Medicaid Services. 2014 Nov 06 Accessed at: <https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/>. [accessed 2025 Sep 09] [Context Link 1]
44. Medicare Coverage Database. [Internet] Centers for Medicare and Medicaid Services. Accessed at: <https://www.cms.gov/medicare-coverage-database/search.aspx?> Updated 2025 [accessed 2025 Oct 23] [Context Link 1]

Footnotes

[A] Syncope is defined as a transient loss of consciousness and postural tone due to inadequate cerebral perfusion, with prompt recovery without resuscitative measures.(4)(6)(13) [A in Context Link 1]

[B] Delayed orthostatic hypotension is distinguished from orthostatic hypotension by a sustained decrease in blood pressure occurring beyond 3 minutes of standing or upright tilt table testing, and thus may be responsible for episodes of presyncope or syncope that occur only after prolonged standing.(1)(3)(25) [B in Context Link 1]

[C] Postural orthostatic tachycardia syndrome is a chronic disorder characterized by a sustained increase in heart rate within 10 minutes of upright posture and without significant orthostatic hypotension (an increase in heart rate of 30 beats per minute or more in adults and 40 beats per minute or more in adolescents age 12 to 19 years).(3)(27)(28)(29)(30) [C in Context Link 1]

[D] Psychogenic pseudosyncope may be differentiated from true syncope with normal blood pressure and heart rate despite an apparent loss of consciousness and motor control during tilt table testing.(1)(14) [D in Context Link 1]

Codes

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