

Advanced Care Planning Peer Reviewed Research: Summary of Search Strategy Peer Reviewed Original Research Citations

Peer Reviewed Search Strategy

Step 1. We previously had searched Ovid MEDLINE database for publications from 1974 to 2023 with the following Medical Subject Headings (MeSH) terms and key words combined with OR:

MeSH Term 1: Advance care planning OR

Key words: advance, end-of-life, palliative, hospice, advance directives, living will, power of attorney for healthcare, health care proxy, surrogate decision maker, medical directive Code status, do not resuscitate, do not intubate, do not hospitalize, out-of-hospital DNR, physician orders for life -sustaining treatment, medical orders for life sustaining treatment

AND

MeSH Term 2: Documentation OR

Key words: care plan, electronic health record, claims, billing codes, structured data fields, international classification of diseases

The database search yielded 225 articles.

Step 2. Using Covidence screening software, two project team members independently reviewed the titles and abstracts of each of the initial 225 articles returned from the database search, evaluating each article for inclusion or exclusion. One article was deemed a duplicate and was removed. A third author reviewed and adjudicated discordant screening decisions.

We included articles that were:

- English-language research studies that were based on adult United States (US) populations
- focused specifically on ACP in hospital settings

Though the initial database search captured articles published between 1974 and 2023, we further restricted the date of publication to only include articles published between January 2014 to October 2023 to yield more contemporaneous results given there has been an evolution in the approach to ACP in the past 10 years.

We excluded articles that were:

- based solely on pediatric populations
- editorials or perspective pieces
- not related to ACP
- limited to examining ACP in the context of the COVID pandemic

We identified 78 articles for exclusion based on review of titles and abstracts. Following the title and abstract review, one author reviewed the full texts of the remaining 146 articles and identified 121 articles for exclusion. We conducted data extraction from the remaining 25 articles eligible for inclusion in our review.

Step 3. Using a standardized instrument, three authors abstracted data from the 25 articles identified for inclusion using database search.

Step 4. Seven additional articles were commonly cited throughout our literature review and were included in data abstraction.

Step 5. At CMS' request, we supplemented our citations with literature published from 2023 through April 2025 by searching PubMed using key words of "Advance Care Planning Billing United States," "Advance Care Planning EHR United States," "Advance Directive United States," or "Advance Care Planning United States."

Step 6. Two team members evaluated the articles and added seven recent citations to the existing list of references that provided evidence of measure need.

Peer Reviewed Original Research Citations

1. Ashana DC, Chen X, Agiro A, Sridhar G, Nguyen A, Barron J, Haynes K, Fisch M, Debono D, Halpern SD, Harhay MO. Advance Care Planning Claims and Health Care Utilization Among Seriously Ill Patients Near the End of Life. *JAMA Netw Open*. 2019 Nov 1;2(11):e1914471. doi: 10.1001/jamanetworkopen.2019.14471. PMID: 31675087
2. Bazargan M, Cobb S, Assari S, Kibe LW. Awareness of Palliative Care, Hospice Care, and Advance Directives in a Racially and Ethnically Diverse Sample of California Adults. *American Journal of Hospice and Palliative Medicine*®. 2021;38(6):601-609. doi:10.1177/1049909121991522. Epub 2021 Feb 4. PMID: 33535787.
3. Callahan K, Acharya Y, Hollenbeak CS. Validity of ICD codes to identify do not-resuscitate orders among older adults with heart failure: A single center study. *PLoS One*. 2023 Mar 13;18(3):e0283045. doi: 10.1371/journal.pone.0283045. PMID: 36913366
4. Caplan H, Santos J, Bershad M, Spritzer K, Liantonio J. Assessment of Feelings Towards Advanced Care Planning in the Latino Community. *Am J Hosp Palliat Care*. 2024 Feb;41(2):187-192. doi: 10.1177/10499091231173413. Epub 2023 May 9. PMID: 37159467
5. Catlett L, Johnson LA. Disparities in Advance Directive Documentation for Rural-Dwelling Persons With Lung Cancer. *Am J Hosp Palliat Care*. 2024 Mar;41(3):318-323. doi: 10.1177/10499091231178523. Epub 2023 May 22. PMID: 37212276
6. Colley A, Lin JA, Pierce L, Finlayson E, Sudore RL, Wick E. Missed Opportunities and Health Disparities for Advance Care Planning Before Elective Surgery in Older Adults. *JAMA Surg*. 2022 Oct 1;157(10):e223687. doi: 10.1001/jamasurg.2022.3687. Epub 2022 Oct 12. PMID: 36001323
7. Dillon E, Chuang J, Gupta A, Tapper S, Lai S, Yu P, Ritchie C, Tai-Seale M. Provider Perspectives on Advance Care Planning Documentation in the Electronic Health Record: The Experience of Primary Care Providers and Specialists Using Advance Health-Care Directives and Physician Orders for Life-Sustaining Treatment. *Am J Hosp Palliat Care*. 2017 Dec;34(10):918-924. doi: 10.1177/1049909117693578. Epub 2017 Feb 15. PMID: 28196448
8. Dunn RH, Ahn J, Bernstein J. End-of-life Care Planning and Fragility Fractures of the Hip: Are We Missing a Valuable Opportunity? *Clin Orthop Relat Res*. 2016 Jul;474(7):1736-9. Doi: 10.1007/s11999-015-4675-1. Epub 2015 Dec 21. PMID: 26689582
9. Gelfman LP, Barnes DE, Goldstein N, Volow AM, Shi Y, Li B, Sudore RL. Quality and Satisfaction With Advance Care Planning Conversations Among English- and Spanish-Speaking Older Adults. *J Palliat Med*. 2023 Oct;26(10):1380-1385. doi: 10.1089/jpm.2022.0565. Epub 2023 Jun 19. PMID: 37335910; PMCID: PMC10551762.
10. Glass DP, Wang SE, Minardi PM, Kanter MH. Concordance of End of Life Care with End-of-Life Wishes in an Integrated Health Care System. *JAMA Netw Open*. 2021 Apr 1;4(4):e213053. doi: 10.1001/jamanetworkopen.2021.3053. PMID: 33822069
11. Gupta A, Jin G, Reich A, Prigerson HG., Ladin K, Kim D, Ashana DC, Cooper Z, Halpern SD and Weissman JS. (2020), Association of Billed Advance Care Planning with End-of-Life Care Intensity for 2017 Medicare Decedents. *J Am Geriatr Soc*, 68: 1947-1953. <https://doi.org/10.1111/jgs.16683>. PMID: 32853429
12. Harmon D, De Lima B, Littlefield K, Brooks M, Drago K. A Quality Improvement Initiative to Increase Documentation of Preferences for Life-Sustaining Treatment in Hospitalized Adults, *The Joint Commission Journal on Quality and Patient Safety*, Volume 50, Issue 2, 2024, Pages 149-153, doi:10.1016/j.jcjq.2023.09.007

13. Jain VG, Greco PJ, Kaelber DC. Code Status Reconciliation to Improve Identification and Documentation of Code Status in Electronic Health Records. *Appl Clin Inform*. 2017 Mar 8;8(1):226-234. doi: 10.4338/ACI-2016-08-RA-0133. PMID: 28271120
14. Jones T, Luth EA, Lin SY, Brody AA. Advance Care Planning, Palliative Care, and End-of-life Care Interventions for Racial and Ethnic Underrepresented Groups: A Systematic Review. *J Pain Symptom Manage*. 2021 Sep;62(3):e248-e260. doi: 10.1016/j.jpainsymman.2021.04.025. Epub 2021 May 11. PMID: 33984460; PMCID: PMC8419069
15. Khan IA, Magnuson JA, Ciesielka KA, Levicoff EA, Cohen-Rosenblum A, Krueger CA, Fillingham YA. Patients From Distressed Communities Who Undergo Surgery for Hip Fragility Fractures Are Less Likely to Have Advanced Care Planning Documents in Their Electronic Medical Record. *Clin Orthop Relat Res*. 2023 Feb 1;481(2):312-321. doi: 10.1097/CORR.0000000000002354. Epub 2022 Aug 16. PMID: 35973119
16. Lamas D, Panariello N, Henrich N, Hammes B, Hanson LC, Meier DE, Guinn N, Corrigan J, Hubber S, Luetke-Stahlman H, Block S. Advance Care Planning Documentation in Electronic Health Records: Current Challenges and Recommendations for Change. *J Palliat Med*. 2018 Apr;21(4):522-528. doi: 10.1089/jpm.2017.0451. Epub 2018 Jan 23. PMID: 29360417.
17. Lee RY, Modes ME, Sathitratanaheewin S, Engelberg RA, Curtis JR, and Kross EK. (2020), Conflicting Orders in Physician Orders for Life-Sustaining Treatment Forms. *J Am Geriatr Soc*, 68: 2903-2908. <https://doi.org/10.1111/jgs.16828>. PMID: 32936447
18. Lehmann CU, Petersen C, Bhatia H, Berner ES, Goodman KW. Advance Directives and Code Status Information Exchange: A Consensus Proposal for a Minimum Set of Attributes. *Camb Q Healthc Ethics*. 2019 Jan;28(1):178-185. Doi: 10.1017/S096318011800052X. PMID: 30570474
19. Lemon C, De Ridder M, Khadra M. Do Electronic Medical Records Improve Advance Directive Documentation? A Systematic Review. *Am J Hosp Palliat Care*. 2019 Mar;36(3):255-263. doi: 10.1177/1049909118796191. Epub 2018 Aug 30. PMID: 30165755
20. Lovell A, Yates P. Advance Care Planning in palliative care: a systematic literature review of the contextual factors influencing its uptake 2008-2012. *Palliat Med*. 2014 Sep;28(8):1026-35. doi: 10.1177/0269216314531313. Epub 2014 May 12. PMID: 24821708.
21. Luth EA, Pan CX, Viola M, Prigerson HG. Dementia and Early Do Not Resuscitate Orders Associated With Less Intensive of End of Life Care: A Retrospective Cohort Study. *Am J Hosp Palliat Care*. 2021 Dec;38(12):1417-1425. doi: 10.1177/1049909121989020. Epub 2021 Jan 20. PMID: 33467864
22. Malhotra C, Huynh VA, Shafiq M, Batcagan-Abueg APM. Advance care planning and caregiver outcomes: intervention efficacy - systematic review. *BMJ Support Palliat Care*. 2024 Jan 8;13(e3):e537-e546. doi: 10.1136/spcare-2021-003488. PMID: 35788465.
23. McMahan RD, Tellez I, Sudore RL. Deconstructing the complexities of advance care planning outcomes: what do we know and where do we go? A Scoping Review. *J Am Geriatr Soc* 2021;69:234–244. 10.1111/jgs.16801. Epub 2020 Sep 7. PMID: 32894787
24. Mindo-Panasis D, Sudore RL, Cenzer I, Smith AK, Kotwal AA. Disparities in advance care planning among older US immigrants. *J Am Geriatr Soc*. 2023 Oct;71(10):3244-3253. doi: 10.1111/jgs.18498. Epub 2023 Jul 11. PMID: 37431769
25. Naasan G, Boyd ND, Harrison KL, Garrett SB, D'Aguiar Rosa T, Pérez-Cerpa B, McFarlane S, Miller BL, Ritchie CS. Advance Directive and POLST Documentation in Decedents With Dementia at a Memory Care Center: The Importance of Early Advance Care Planning. *Neurol Clin Pract*. 2022 Feb;12(1):14-21. doi: 10.1212/CPJ.0000000000001123. PMID: 36157620
26. Patel NK, Passalacqua SA, Meyer KN, de Erausquin GA. Full Code to Do-Not-Resuscitate: Culturally Adapted Palliative Care Consultations and Code Status Change Among Seriously Ill Hispanic Patients. *Am J Hosp Palliat Care*. 2022 Jul;39(7):791-797. doi: 10.1177/10499091211042305. Epub 2021 Sep 1. PMID: 34467766.

27. Petersile M, Devuni D. Palliative Care and Advanced Directive Practices at Liver Transplant Centers in the United States. *J Palliat Med*. 2023 Oct;26(10):1327-1332. doi: 10.1089/jpm.2022.0556. Epub 2023 May 4. PMID: 37155706.
28. Prater LC, Wickizer T, Bower JK, Bose-Brill S. The Impact of Advance Care Planning on End-of-Life Care: Do the Type and Timing Make a Difference for Patients With Advanced Cancer Referred to Hospice? *Am J Hosp Palliat Care*. 2019 Dec;36(12):1089-1095. doi: 10.1177/1049909119848987. Epub 2019 May 14. PMID: 31088134.
29. Pyles O, Hritz CM, Gulkar P, Straveler JD, Grudzen CR, Briggs C, Southerland LT. Locating Advance Care Planning Documents in the Electronic Health Record during Emergency Care. *J Pain Symptom Manage*. 2022 May;63(5):e489-e494. doi: 10.1016/j.jpainsymman.2021.12.002. Epub 2021 Dec 8. PMID: 34896277
30. Rosa WE, Izumi S, Sullivan DR, Lakin J, Rosenberg AR, Creutzfeldt CJ, Lafond D, Tjia J, Cotter V, Wallace C, Sloan DE, Cruz-Oliver DM, DeSanto-Madeya S, Bernacki R, Leblanc TW, Epstein AS. Advance Care Planning in Serious Illness: A Narrative Review. *J Pain Symptom Manage*. 2023 Jan;65(1):e63-e78. doi: 10.1016/j.jpainsymman.2022.08.012. Epub 2022 Aug 24. PMID: 36028176
31. Rubins JB. Underutilization of Portable Orders for Life-Sustaining Treatment at Discharge from Hospital: Observational Study at US Academic Trauma Center. *J Gen Intern Med*. 2020 Jul;35(7):2065-2068. doi: 10.1007/s11606-020-05698-1. Epub 2020 Feb 10. PMID: 32043260
32. Shah KB, Shah SK, Manful A, Xiang L, Reich AJ, Semco RS, Tjia J, Ladin K, Weissman JS. Advance care planning billing codes in patients undergoing TAVR is infrequent and associated with adverse TAVR outcomes. *J Am Geriatr Soc*. 2023 Jan;71(1):282-287. doi: 10.1111/jgs.18045. Epub 2022 Sep 27. PMID: 36165290; PMCID: PMC9870844.
33. Song MK, Manatunga A, Plantinga L, Metzger M, Kshirsagar AV, Lea J, Abdel-Rahman EM, Jhamb M, Wu E, Englert J, Ward SE. Effectiveness of an Advance Care Planning Intervention in Adults Receiving Dialysis and Their Families: A Cluster Randomized Clinical Trial. *JAMA Netw Open*. 2024 Jan 2;7(1):e2351511. doi: 10.1001/jamanetworkopen.2023.51511. PMID: 38289604; PMCID: PMC10828909.
34. Thurston A, Wayne DB, Feinglass J, Sharma RK. Documentation quality of inpatient code status discussions. *J Pain Symptom Manage*. 2014 Oct;48(4):632-8. doi: 10.1016/j.jpainsymman.2013.11.014. Epub 2014 Mar 27. PMID: 24681110
35. Turnbull AE, Ning X, Rao A, Tao JJ, Needham DM. Demonstrating the impact of POLST forms on hospital care requires information not contained in state registries. *PLoS One*. 2019 Jun 18;14(6):e0217113. doi: 10.1371/journal.pone.0217113. PMID: 31211788
36. Urman RD, Lilley EJ, Changala M, Lindvall C, Hepner DL, Bader AM. A Pilot Study to Evaluate Compliance with Guidelines for Preprocedural Reconsideration of Code Status Limitations. *J Palliat Med*. 2018 Aug;21(8):1152-1156. doi: 10.1089/jpm.2017.0601. Epub 2018 Feb 26. PMID: 29480756
37. Warren MB, Lapid MI, McKean AJ, Cha SS, Stevens MA, Brekke FM, Hegard TL, Kung S, Burton MC. Code status discussions in psychiatric and medical inpatients. *J Clin Psychiatry*. 2015 Jan;76(1):49-53. doi: 10.4088/JCP.13m08912. PMID: 25562447
38. Yadav KN, Gabler NB, Cooney E, Kent S, Kim J, Herbst N, Mante A, Halpern SD, Courtright KR. Approximately One In Three US Adults Completes Any Type Of Advance Directive For End-Of-Life Care. *Health Aff (Millwood)*. 2017 Jul 1;36(7):1244-1251. doi: 10.1377/hlthaff.2017.0175. PMID: 28679811
39. Zupanc SN, Lakin JR, Volandes AE, Paasche-Orlow MK, Moseley ET, Gundersen DA, Das S, Penumarthy A, Martins-Welch D, Burns EA, Carney MT, Itty JE, Emmert K, Tulskey JA, Lindvall C. Forms or Free-Text? Measuring Advance Care Planning Activity Using Electronic Health Records. *J Pain Symptom Manage*. 2023 Nov;66(5):e615-e624. doi: 10.1016/j.jpainsymman.2023.07.016. Epub 2023 Aug 1. PMID: 37536523; PMCID: PMC10592170.