ORIGINAL RESEARCH

An Educational Model for Teaching Prognostication to Hospitalists

Mark Sims, MD[1], Sitaram Vangala, MS[2], Digish Shah, MD[3], Daniel Karlin, MD[4], Christopher Pietras, MD[4] and Erin Dowling, MD[3]

[1]Department of Medicine, University of Utah
[2]Department of Medicine Statistics Core, UCLA
[3]Department of Medicine, Division of Hospital Medicine, UCLA
[4]Department of Medicine, Palliative Care, UCLA

Abstract

Accurate prognostication is essential for the practice of effective medical care in the inpatient setting. However, most hospital medicine physicians have no formal instruction in determining prognosis. We present the results of a cross-disciplinary educational conference with palliative care and hospital medicine physicians. Using a case-based model, small group discussion, and formal instruction, we found that our model increased provider confidence in making accurate, timely, and patient-centered prognoses. After the conference, participants showed a significant increase in their self-reported systematic approach to estimating prognosis ($p<0.0001$), framework for goals of care discussions ($p<0.0001$), and framework for prognosis in the setting of goals of care ($p=0.002$). Repeat attendees re-demonstrated improvement over the course of an individual session but did not show an additive increase over time. These results provide a promising model for other institutions seeking to improve primary palliative care, and in particular inpatient prognostication skills.

Introduction

Accurate prognostication is an essential skill in providing high-quality care to patients. The Institute of Medicine recognizes improving provider communication and prognostication at the end of life as critical in delivering high-value care.[1] The AAMC, the ACP Task Force on High-Value Care, and the ACGME recommend that internal medicine training include skills related to end-of-life care and communicating prognosis.[2-4] Physicians acknowledge that prognostication is an important skill that enhances patient care.[5,6] Finally, most patients report wanting early, accurate, and concise information regarding prognosis.[7,8] When informed about prognosis, even at the end of life, accurate prognostication is associated with greater patient satisfaction and does not increase anxiety or depression.[9] Accurate prediction and communication of prognosis is important for informed decision making and patient planning and prioritization of care.[5]

Unfortunately, providers do not frequently incorporate prognostication into their routine clinical practice. First, providers are undertrained in prognostication. Until recently, prognostication and other palliative care skills were not widely taught in American medical schools. Even now, implementation varies and curricula are not standardized.[10-14] Residents may have access to palliative care curricula; however, sessions are not required and specific education on prognostication is uncommon.[15-17] Even in fields where prognostication is critical, education is lacking. In one survey of oncologists, 73% noted that prognostication education was absent or insufficient in their fellowship programs.[18] Secondly, accurate prognostication is inherently difficult, due to the unpredictable nature of illness. Certain diseases have limited data and therapeutics are evolving rapidly.[19,20] Clinical predictions of survival (CPS) by providers are inaccurate and tend to overestimate survival compared to actual survival leading to provider and patient frustration.[21-25] Although physician experience would intuitively seem to improve prognostication, studies report provider experience is a poor predictor of accurate prognostication.[26] As such, most providers report feeling significant stress and actively avoid communicating a prognosis unless directly asked by patients.[27]

Although prognostication is fraught with challenges, several studies have shown success in improving confidence and accuracy. Paladino et al[28] utilized educational sessions, computer prompts, and active coaching for a group of oncologists and found that prognosis and documentation of patient understanding of their illness increased significantly. Several studies show increased confidence gained from educational sessions for providers at different levels of training and in different practice environments.[29-33] Algorithmic support and functional scales have shown promise in augmenting clinical predictions of survival (CPS) formulated by providers. The Palliative Prognostic Score (PaP) showed improvement over CPS especially in inexperienced providers.[34] Another study found, the Palliative Predictive Index (PPI) was more accurate than CPS and used to augment CPS.[35] When applied to the appropriate clinical context, algorithmic support and functional scales augment CPS.[36]

Although all clinicians need primary palliative care skills, hospital medicine physicians are uniquely positioned to provide guidance on prognosis. In the USA, most people die in the hospital or have at least one hospitalization in the last 6 months

of life.[37] Hospitalists are tasked with formulating and compassionately delivering a prognosis to acutely ill patients.[38] In one survey of hospitalists more than half reported daily concerns about communicating prognosis. Most were confident in discussing goals of care and prognosis, but they lacked organized strategies, dedicated time, and specific training.[6] It is essential to develop curricula and support systems to aid hospitalists in prognosis.

Previous efforts at prognostication instruction have been limited by the challenges of educating colleagues at similar or more senior career phases.[26] Anecdotally, many of our hospitalist colleagues expressed a strong confidence in their ability to prognosticate as a result of their years of clinical work. In our prior efforts, we encountered resistance to educational methods that solely focused on didactic education. Hence, we chose an educational strategy to combine formal prognostication education, clinical cases, and group discussion to best promote adoption and retention of prognostication methods. Drawing on the work of Ermacora, we incorporated education on algorithmic support and functional scales to improve provider estimation of prognosis.[34]

The goal of this improvement project was to increase provider confidence in three areas: using a system to estimate prognosis, having a framework to discuss prognosis, and having a framework to discuss goals of care.

Methods

Our group developed a cross disciplinary conference between palliative care and hospital medicine focused on accurate prognostication. From July 2018 to June 2019 sessions occurred monthly at two hospital sites within our hospitalist program. One is a 281-bed community referral hospital, and the other a 520-bed tertiary referral hospital. Although the faculty overlap, the hospitalist staff at the tertiary hospital tend to have five or more years of experience and those at the community hospital tend to have fewer than five years of experience. A standardized format was used at both sites. Each hour-long session was led by a palliative care physician. A physician discussant from the hospitalist division presented a challenging current patient he or she was caring for. Hospitalist participants were given time to discuss the case in a small group setting. Typical sessions included an average of 10 hospitalist faculty. After a period of open discussion, the palliative care physician gave a brief presentation reviewing standardized methods of prognostication.

The presentation discussed the limitations of clinical judgement alone and emphasized the incorporation of illness trajectory, algorithmic support, and functional scales in developing a prognosis. Illness trajectory, defined as the broad pattern of decline based on an underlying illness, was categorized into three major domains: sudden illness (such as cancer or trauma), solid organ failure (such as heart failure or COPD), and frailty dementia.[39] The section on algorithmic support explored the assistive tools provided by eprognosis.org in estimating mortality, such as the ADEPT scale for patient with dementia or the Seattle Heart Failure model. Lastly, participants discussed the use of functional scales, such as the Palliative Performance Scale, as a means of tracking functional status between hospitalization independent of the underlying disease status.[40]

Participants were asked to incorporate the reviewed methods into their initial clinical judgment and refine their prognosis. Once a more accurate prognosis was agreed upon, the group then discussed how this prognostic information would impact treatment decisions and a means of clearly and compassionately communicating this prognosis to the patient and family. Participants filled out a survey (*Appendix I*) before and after the session where they self-reported their confidence in having goals of care discussions; communicating and making accurate prognoses; and familiarity with prognostication tools.

Descriptive statistics were reported for each of the questionnaire items, stratifying by pre-test v. post-test. Reponses to each item were presented using frequencies and percentages, and changes from pre-test to post-test were summarized using means and standard deviations (SDs) of paired differences, after numerically coding the Likert scale response options. Changes were evaluated using paired t-tests. A significance level of 0.05 was used in all analyses.

The project was submitted to the Institutional Office of Human Research Protection Program and determined to be of quality improvement nature and not requiring full IRB review.

Results

We analyzed the questionnaires comparing pre and post-test responses. Additionally, we gathered baseline data for several other metrics relating to goals of care and prognosis (Table 1). Participants were asked to rate their use of a system for prognostication, framework for discussing prognosis and framework for goals of care before and after each session. We found significant improvement in each metric pre and post session ($p<0.01$ for each metric).

Additionally, we analyzed our data stratifying by first time versus repeat attendees (Figure 1). In this subgroup analysis, repeat attendees and first-time attendees both had significant improvement in each metric ($p<0.05$ for each metric in each subgroup). When comparing first time attendees to repeat attendees there was statistically significant greater improvement in metrics for first time attendees for use of a system of prognostication and framework for discussing goals of care ($p=0.025$, $p=0.016$). However, when we compared the pre-test results for first time attendees to repeat attendees there was no significant difference in confidence in any of the three metrics ($p=0.5$, $p=0.4$, $p=0.7$).

Discussion

Our results suggest that hospitalists initially gain confidence in developing a prognosis and communicating about goals of care and prognosis from case-based instruction. Although the first-

time attendees gain the most confidence, repeat attendees also see significant benefit within repeat sessions. However, when comparing first time and repeat attendees the benefits of attendance are not durable. This model for engagement is simple and without technological needs. It can be easily replicated at other institutions to increase provider knowledge of prognostication. Further studies are needed to be made to ensure that the sessions have long term improvements before widespread adoption can be recommended.

Although there were improvements in confidence within each session, repeat attendees did not have significantly more confidence in their prognostication skills prior to the sessions than first time attendees. The reasons for this may be multifactorial. Individual providers, may have multiple months between sessions and providers may have initially felt more confident but needed earlier reinforcement. Attendees may have found that practical application of the skills acquired in the sessions was more challenging than anticipated. We believe this reinforces the need for a systematic approach to prognostication within our medical center, medical school, and training programs. If tools, resources, and educational sessions are not readily available, confidence will wane, and prognostication will suffer. Similarly, skills may be bolstered by bedside support for prognostication, incorporated into the electronic health record (EHR). A similar study found initial confidence gained in a single session was no longer present at a four-week follow-up.[15] In studies where confidence was durable over longer periods, a longitudinal, systematic approach was utilized.[32,41] Nagpal et al[42] used both case-based simulations and supervised clinical assessments of learners and saw durable increases in confidence. Future iterations of this educational session may need to incorporate these strategies to improve retention of confidence. At our institution we have been implementing the Medical Surprise Question for IM admissions. Similarly, we hope to offer best practice alerts as to when validated prognostic tools might be of use. Additionally, we hope to integrate the improvement of prognostication within larger scale health system improvement projects with resources allocated for sustainability.

One additional aspect that emerged was the increasingly open and vulnerable expression of the hospitalists' emotional experiences related to these cases. Often, the hospitalist presenting the case was able to express their own frustration, doubts, and worries related to a case and effectively debrief the situation with additional support from colleagues. While we did not intend to study the potential benefit to emotional wellbeing separate from the educational benefit, we encountered sincere appreciation for a safe space to explore and process challenging cases. Further implementation of this project at other institutions may allow for the emotional aspects to be studied, based on the goals of the program and the level of comfort of the facilitator.

With the caveat of poor long-term retention, our research provides a starting point for other institutions seeking to increase provider knowledge of prognosis in the inpatient setting, with the goal of promoting patient-centered care. We believe that assuring the primary physician in the hospital is well equipped with the tools to provide his or her patient with the most accurate prognosis is an important first step. We presume these results will translate into improved primary palliative care in the inpatient setting, however, this needs further evaluation. When patients are empowered with accurate data regarding prognosis, they can make informed decisions regarding goals of care and treatment decisions.

Limitations of our study are a lack of clinical outcomes and limited sample size. Potential biases that we identified are the differences between the two academic hospitalists groups as they operate in quaternary and community-based settings. Considering these limitations, future directions for research include additional inpatient clinical outcome-based research, increasing access to prognostication calculators within the medical record, and providing educational sessions to providers in other disciplines. Clinical outcome-based research could focus on how provider education and prognostication change patient outcomes and satisfaction with care at the end of life. Easier access to prognostication calculators within the medical record would equip providers with data pertaining to prognosis. Finally, further education to other providers would expand the benefit of these sessions to other disciplines where accurate prognosis is essential. In our medical centers, we plan to expand our educational model to other inpatient specialties that are involved in primary palliative care, pilot sessions with outpatient primary care providers, and explore sessions within graduate medical education. A comprehensive program that provides continuous medical education and point-of-care support to attending physicians will help sustain progress made in prognostication skill improvement.

As medical care continues to advance, the need for education on prognosis and end of life care will only increase. Effective continued medical education on prognosis is essential to meet the challenges of an aging population with an increased burden of disease at the end of life.

	Pre-Session	Post-Session	Change	
	(N=64)	(N=60)	Mean (SD)	P
Use a system to estimate prognosis?			0.81 (0.82)	<0.001
Very much (4)	3 (5%)	5 (8%)		
Agree	15 (23%)	46 (77%)		
Somewhat	36 (56%)	9 (15%)		
Don't agree (1)	10 (16%)	0		
Have a general framework to discuss prognosis?			0.52 (0.73)	<0.001
Very much (4)	4 (6%)	9 (15%)		
Agree	32 (50%)	47 (78%)		
Somewhat	25 (39%)	4 (7%)		
Don't agree (1)	3 (5%)	0		
Have a framework for goals of care discussion?			0.29 (0.67)	0.002
Very much (4)	8 (13%)	12 (20%)		
Agree	37 (58%)	44 (73%)		
Somewhat	19 (30%)	4 (7%)		
Don't agree (1)	0	0		

Table 1: Survey response data for pre and post survey responses including statistical analysis.

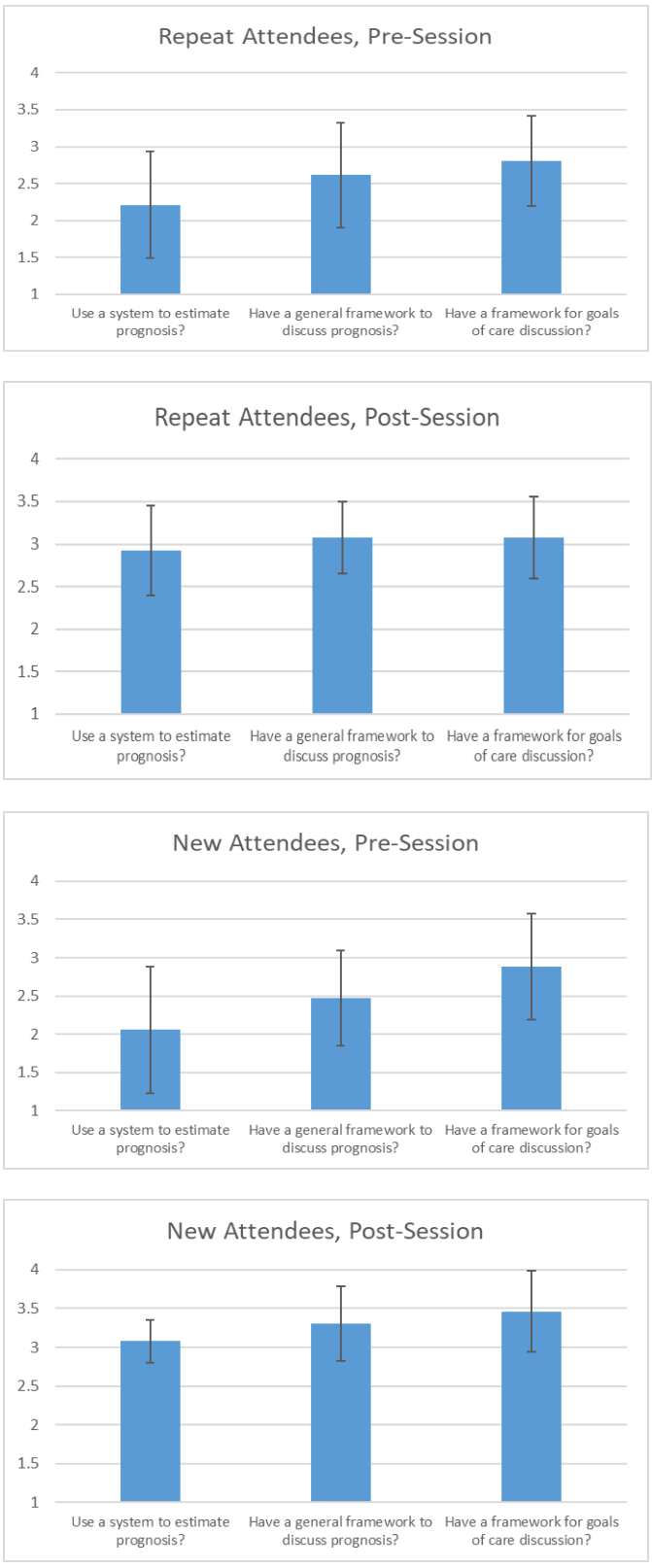

Figure 1: Response results comparing repeat and new session attendees, pre and post-session.

Acknowledgements

Elizabeth Frakes (Health Science Librarian, Spencer S. Eccles Health Sciences Library, University of Utah).

Disclosures
None

REFERENCES

1. **Pizzo PA, Walker DM, Bomba PA, Bruera E, Fahey CJ, Hinds PS, et al.** Institute of Medicine. Dying in America: Improving Quality and Honoring Individual Preferences Near the End of Life. [Internet]. Washington, DC: *The National Academies Press*; 2015. 638 p. Available from: http://nap.edu/18748.
2. **Englander R, Cameron T, Ballard AJ, Dodge J, Bull J, Aschenbrener CA**. Toward a common taxonomy of competency domains for the health professions and competencies for physicians. *Acad Med.* 2013 Aug;88(8):1088-94. doi: 10.1097/ACM.0b013e31829 a3b2b. PMID: 23807109.
3. ACGME. Program Requirements for Graduate Medical Education in Internal Medicine. Editorial Revision July 1, 2020.
4. **Bernacki RE, Block SD; American College of Physicians High Value Care Task Force**. Communication about serious illness care goals: a review and synthesis of best practices. *JAMA Intern Med*. 2014 Dec;174(12):1994-2003. doi: 10.1001/jamainternmed.2014.5271. PMID: 25330167.
5. **Pontin D, Jordan N**. Issues in prognostication for hospital specialist palliative care doctors and nurses: a qualitative inquiry. *Palliat Med*. 2013 Feb;27(2):165-71. doi: 10.1177/0269216311432898. Epub 2011 Dec 21. PMID: 22190605.
6. **Rosenberg LB, Greenwald J, Caponi B, Doshi A, Epstein H, Frank J, Lindenberger E, Marzano N, Mills LM, Razzak R, Risser J, Anderson WG**. Confidence with and Barriers to Serious Illness Communication: A National Survey of Hospitalists. *J Palliat Med*. 2017 Sep;20(9):1013-1019. doi: 10.1089/jpm.2016.0515. Epub 2017 Apr 4. PMID: 28375816.
7. **Hagerty RG, Butow PN, Ellis PM, Dimitry S, Tattersall MH**. Communicating prognosis in cancer care: a systematic review of the literature. *Ann Oncol*. 2005 Jul;16(7):1005-53. doi: 10.1093/annonc/mdi211. Epub 2005 Jun 6. PMID: 15939716.
8. **Smith TJ, Dow LA, Virago EA, Khatcheressian J, Matsuyama R, Lyckholm LJ**. A pilot trial of decision aids to give truthful prognostic and treatment information to chemotherapy patients with advanced cancer. *J Support Oncol*. 2011 Mar-Apr;9(2):79-86. doi: 10.1016/j.suponc. 2010.12.005. PMID: 21542415; PMCID: PMC3589716.
9. **Enzinger AC, Zhang B, Schrag D, Prigerson HG**. Outcomes of Prognostic Disclosure: Associations With Prognostic Understanding, Distress, and Relationship With Physician Among Patients With Advanced Cancer. *J Clin*

Oncol. 2015 Nov 10;33(32):3809-16. doi: 10.1200/JCO.2015.61.9239. Epub 2015 Oct 5. PMID: 26438121; PMCID: PMC4737862.

10. **Bryce C, Kam-Magruder J, Jackson J, Ledford CJW, Unwin BK**. Palliative Care Education in the Family Medicine Clerkship: A CERA Study. *PRiMER*. 2018 Oct 15;2:20. doi: 10.22454/PRiMER.2018.457651. PMID: 32818192; PMCID: PMC7426131.
11. **Shaheen AW, Denton GD, Stratton TD, Hoellein AR, Chretien KC**. End-of-life and palliative care curricula in internal medicine clerkships: a report on the presence, value, and design of curricula as rated by clerkship directors. *Acad Med*. 2014 Aug;89(8):1168-73. doi: 10.1097/ACM.0000000000000311. PMID: 24853196.
12. **Head BA, Schapmire TJ, Earnshaw L, Chenault J, Pfeifer M, Sawning S, Shaw MA.** Improving medical graduates' training in palliative care: advancing education and practice. *Adv Med Educ Pract*. 2016 Feb 24;7:99-113. doi: 10.2147/AMEP.S94550. PMID: 26955298; PMCID: PMC4772917.
13. **Jacobowski N, Mulder J**. Palliative Care Education during Medical School: A National Survey of Medical School Deans and Graduating Students. *Journal of Pain and Symptom Management* [Internet]. 2010;39(2):335. Available from: https://www.sciencedirect.com/science/article/pii/S0885392410000072?via%3Dihub.
14. **Ury WA, Berkman CS, Weber CM, Pignotti MG, Leipzig RM**. Assessing medical students' training in end-of-life communication: a survey of interns at one urban teaching hospital. Acad Med. 2003 May;78(5):530-7. doi: 10.1097/00001888-200305000-00019. PMID: 12742792.
15. **Bear A, Keuter T, Patel JJ**. The Impact of Teaching Prognostication at the End of Life: A Pre-Post Interventional Study. *Am J Hosp Palliat Care*. 2018 Mar;35(3):473-477. doi: 10.1177/1049909117721697. Epub 2017 Jul 21. PMID: 28731361.
16. **Chen E, McCann JJ, Lateef OB**. Attitudes Toward and Experiences in End-of-life Care Education in the Intensive Care Unit: A Survey of Resident Physicians. *Am J Hosp Palliat Care*. 2015 Nov;32(7):738-44. doi: 10.1177/1049909114539038. Epub 2014 Jun 16. PMID: 24939207.
17. **Schmit JM, Meyer LE, Duff JM, Dai Y, Zou F, Close JL**. Perspectives on death and dying: a study of resident comfort with End-of-life care. *BMC Med Educ*. 2016 Nov 21;16(1):297. doi: 10.1186/s12909-016-0819-6. PMID: 27871287; PMCID: PMC5117582.
18. **Daugherty CK, Hlubocky FJ**. What are terminally ill cancer patients told about their expected deaths? A study of cancer physicians' self-reports of prognosis disclosure. *J Clin Oncol*. 2008 Dec 20;26(36):5988-93. doi: 10.1200/JCO.2008.17.2221. Epub 2008 Nov 24. PMID: 19029419; PMCID: PMC2645114.
19. **van der Velden NCA, van der Kleij MBA, Lehmann V, Smets EMA, Stouthard JML, Henselmans I, Hillen MA**. Communication about Prognosis during Patient-Initiated Second Opinion Consultations in Advanced Cancer Care: An Observational Qualitative Analysis. *Int J Environ Res Public Health*. 2021 May 26;18(11):5694. doi: 10.3390/ijerph18115694. PMID: 34073341; PMCID: PMC8199300.
20. **Nageswaran S, Hurst A, Radulovic A**. Unexpected Survivors: Children With Life-Limiting Conditions of Uncertain Prognosis. *Am J Hosp Palliat Care*. 2018 Apr;35(4):690-696. doi: 10.1177/1049909117739852. Epub 2017 Nov 9. PMID: 29121791.
21. **Ouchi K, Strout T, Haydar S, Baker O, Wang W, Bernacki R, Sudore R, Schuur JD, Schonberg MA, Block SD, Tulsky JA**. Association of Emergency Clinicians' Assessment of Mortality Risk With Actual 1-Month Mortality Among Older Adults Admitted to the Hospital. *JAMA Netw Open*. 2019 Sep 4;2(9):e1911139. doi: 10.1001/jamanetworkopen.2019.11139. Erratum in: JAMA Netw Open. 2020 Sep 1;3(9):e2020868. PMID: 31517962; PMCID: PMC6745053.
22. **Glare P, Virik K, Jones M, Hudson M, Eychmuller S, Simes J, Christakis N**. A systematic review of physicians' survival predictions in terminally ill cancer patients. *BMJ*. 2003 Jul 26;327(7408):195-8. doi: 10.1136/bmj.327.7408.195. PMID: 12881260; PMCID: PMC166124.
23. **Amano K, Maeda I, Shimoyama S, Shinjo T, Shirayama H, Yamada T, Ono S, Yamamoto R, Yamamoto N, Shishido H, Shimizu M, Kawahara M, Aoki S, Demizu A, Goshima M, Goto K, Gyoda Y, Hashimoto K, Otomo S, Sekimoto M, Shibata T, Sugimoto Y, Morita T**. The Accuracy of Physicians' Clinical Predictions of Survival in Patients With Advanced Cancer. *J Pain Symptom Manage*. 2015 Aug;50(2):139-46.e1. doi: 0.1016/j.jpainsymman.2015.03.004. Epub 2015 Apr 4. PMID: 25847848.
24. **Hoesseini A, Offerman MPJ, van de Wall-Neecke BJ, Sewnaik A, Wieringa MH, Baatenburg de Jong RJ**. Physicians' clinical prediction of survival in head and neck cancer patients in the palliative phase. *BMC Palliat Care*. 2020 Nov 24;19(1):176. doi: 10.1186/s12904-020-00682-2. PMID: 33234115; PMCID: PMC7687732.
25. **Lamont EB, Christakis NA**. Complexities in prognostication in advanced cancer: "to help them live their lives the way they want to". *JAMA*. 2003 Jul 2;290(1):98-104. doi: 10.1001/jama.290.1.98. PMID: 12837717.
26. **Namavar AA, Vangala S, Pietras C, Dowling EP**. Prognostication Accuracy, Confidence, and Decisional Conflict Across Training Levels of Internal Medicine Providers. *J Palliat Care.* 2020 Oct;35(4):226-231. doi: 10.1177/0825859719867672. Epub 2019 Aug 12. PMID: 31405315.
27. **Christakis NA, Iwashyna TJ**. Attitude and self-reported practice regarding prognostication in a national sample of internists. *Arch Intern Med*. 1998 Nov 23;158(21):2389-95. doi: 10.1001/archinte.158.21.2389. PMID: 9827791.
28. **Paladino J, Bernacki R, Neville BA, Kavanagh J, Miranda SP, Palmor M, Lakin J, Desai M, Lamas D, Sanders JJ, Gass J, Henrich N, Lipsitz S, Fromme E, Gawande AA, Block SD**. Evaluating an Intervention to Improve Communication Between Oncology Clinicians and Patients With Life-Limiting Cancer: A Cluster Randomized Clinical Trial of the Serious Illness Care

Program. *JAMA Oncol*. 2019 Jun 1;5(6):801-809. doi: 10.1001/jamaoncol.2019.0292. PMID: 30870556.

29. **Parikh PP, White MT, Buckingham L, Tchorz KM**. Evaluation of palliative care training and skills retention by medical students. *J Surg Res*. 2017 May 1;211:172-177. doi: 10.1016/j.jss.2016.11.006. Epub 2016 Nov 11. PMID: 28501114.
30. **Smith L, O'Sullivan P, Lo B, Chen H**. An educational intervention to improve resident comfort with communication at the end of life. *J Palliat Med*. 2013 Jan;16(1):54-9. doi: 10.1089/jpm.2012.0173. Epub 2012 Oct 2. PMID: 23030260.
31. **Zehm A, Lindvall C, Parks K, Schaefer K, Chittenden E**. Prognosis, Communication, and Advance Care Planning in Heart Failure: A Module for Students, Residents, Fellows, and Practicing Clinicians. *MedEdPORTAL*. 2017 Jun 16;13:10596. doi: 10.15766/mep_2374-8265.10596. PMID: 30800798; PMCID: PMC6338159.
32. **Anderson WG, Puntillo K, Cimino J, Noort J, Pearson D, Boyle D, Grywalski M, Meyer J, O'Neil-Page E, Cain J, Herman H, Barbour S, Turner K, Moore E, Liao S, Ferrell B, Mitchell W, Edmonds K, Fairman N, Joseph D, MacMillan J, Milic MM, Miller M, Nakagawa L, O'Riordan DL, Pietras C, Thornberry K, Pantilat SZ**. Palliative Care Professional Development for Critical Care Nurses: A Multicenter Program. *Am J Crit Care*. 2017 Sep;26(5):361-371. doi: 10.4037/ajcc2017336. PMID: 28864431.
33. **Blomberg BA, Quintana C, Hua J, Hargis-Fuller L, Laux J, Drickamer MA**. Enhancing Advance Care Planning Communication: An Interactive Workshop With Role-Play for Students and Primary Care Clinicians. *MedEdPORTAL*. 2020 Sep 18;16:10973. doi: 10.15766/mep_2374-8265.10973. PMID: 32964122; PMCID: PMC7499812.
34. **Ermacora P, Mazzer M, Isola M, Pascoletti G, Gregoraci G, Basile D, De Carlo E, Merlo V, Luz O, Cattaruzza M, Orlando A, Bozza C, Pella N, Sacco CS, Puglisi F, Fasola G, Aprile G**. Prognostic evaluation in palliative care: final results from a prospective cohort study. *Support Care Cancer*. 2019 Jun;27(6):2095-2102. doi: 10.1007/s00520-018-4463-z. Epub 2018 Sep 18. PMID: 30229339.
35. **Farinholt P, Park M, Guo Y, Bruera E, Hui D**. A Comparison of the Accuracy of Clinician Prediction of Survival Versus the Palliative Prognostic Index. *J Pain Symptom Manage*. 2018 Mar;55(3):792-797. doi: 10.1016/j.jpainsymman.2017.11.028. Epub 2017 Dec 6. PMID: 29221843; PMCID: PMC5834375.
36. **Hui D, Paiva CE, Del Fabbro EG, Steer C, Naberhuis J, van de Wetering M, Fernández-Ortega P, Morita T, Suh SY, Bruera E, Mori M**. Prognostication in advanced cancer: update and directions for future research. *Support Care Cancer*. 2019 Jun;27(6):1973-1984. doi: 10.1007/s00520-019-04727-y. Epub 2019 Mar 13. PMID: 30863893; PMCID: PMC6500464.
37. NCHS. Vital statistics of the United States: mortality. National Center for Health Statistics, Centers for Disease Control and Prevention, US Dept of Health and Human Services. 1993.
38. **Chiu N, Cheon P, Lutz S, Lao N, Pulenzas N, Chiu L, McDonald R, Rowbottom L, Chow E**. Inadequacy of Palliative Training in the Medical School Curriculum. *J Cancer Educ*. 2015 Dec;30(4):749-53. doi: 10.1007/s13187-014-0762-3. PMID: 25487030.
39. **Lynn J, Adamson DM**. Living well at the end of life: Adapting Health Care to Serious Chronic Illness in Old Age. [Internet] 2003. Available at: https://www.rand.org/content/dam/rand/pubs/white_papers/2005/WP137.pdf.
40. **Anderson F, Downing GM, Hill J, Casorso L, Lerch N**. Palliative performance scale (PPS): a new tool. *J Palliat Care*. 1996 Spring;12(1):5-11. PMID: 8857241.
41. **Milic MM, Puntillo K, Turner K, Joseph D, Peters N, Ryan R, Schuster C, Winfree H, Cimino J, Anderson WG**. Communicating with Patients' Families and Physicians About Prognosis and Goals of Care. *Am J Crit Care*. 2015 Jul;24(4):e56-64. doi: 10.4037/ajcc2015855. PMID: 26134340.
42. **Nagpal V, Philbin M, Yazdani M, Veerreddy P, Fish D, Reidy J**. Effective Goals-of-Care Conversations: From Skills Training to Bedside. *MedEdPORTAL*. 2021 Mar 10;17:11122. doi: 10.15766/mep_2374-8265.11122. PMID: 33768153; PMCID: PMC7970639.

Appendix: Pre and Post Survey

Name:

Date:

Pre Conference:

1. Have you attended a hospitalist/palliative care case conference before?

Yes No

2. Do you regularly use goals of care notes tab?

Never Rarely Sometimes Often Almost Always

3. Are you familiar with standard prognostication calculators?

Yes No

4. I estimate prognosis for my patients

Never Rarely Sometimes Often Almost Always

5. I have a system that I use to estimate prognosis

don't agree/somewhat/agree/very much

6. I have a general framework that I use to discuss prognosis:

don't agree/somewhat/agree/very much

7. I have a general framework that I use to discuss goals of care and treatment preferences:

don't agree/somewhat/agree/very much

Name:

Post Conference:

8. If you were caring for a patient with a similar case as presented today, do you feel your level of confidence in presenting accurate prognostication information to the patient has changed after hearing the presentation?

More confident Less confident Same confidence level

9. Please consider the specific case discussed, did your prognosis change from before and after the discussion?:

Yes No

10. If Yes, please select:

improved prognosis/worsened prognosis

Based on the materials presented today, please answer the following questions:

11. I have a system that I can use to estimate prognosis

don’t agree/somewhat/agree/very much

12. I have a general framework that I can use to discuss prognosis:

don’t agree/somewhat/agree/very much

13. I have a general framework that I can use to discuss goals of care and treatment preferences:

don’t agree/somewhat/agree/very much