

Special Communication

Strategic Targeting of Advance Care Planning Interventions

The Goldilocks Phenomenon

J. Andrew Billings, MD; Rachelle Bernacki, MD

Strategically selecting patients for discussions and documentation about limiting life-sustaining treatments—choosing the right time along the end-of-life trajectory for such an intervention and identifying patients at high risk of facing end-of-life decisions—can have a profound impact on the value of advance care planning (ACP) efforts. Timing is important because the completion of an advance directive (AD) too far from or too close to the time of death can lead to end-of-life decisions that do not optimally reflect the patient's values, goals, and preferences: a poorly chosen target patient population that is unlikely to need an AD in the near future may lead to patients making unrealistic, hypothetical choices, while assessing preferences in the emergency department or hospital in the face of a calamity is notoriously inadequate. Because much of the currently studied ACP efforts have led to a disappointingly small proportion of patients eventually benefitting from an AD, careful targeting of the intervention should also improve the efficacy of such projects. A key to optimal timing and strategic selection of target patients for an ACP program is prognostication, and we briefly highlight prognostication tools and studies that may point us toward high-value AD interventions.

JAMA Intern Med. 2014;174(4):620-624. doi:10.1001/jamainternmed.2013.14384
Published online February 3, 2014.

Author Affiliations: Cambridge Health Alliance, Boston, Massachusetts (Billings); Massachusetts General Hospital, Boston (Billings); The Dana Farber Cancer Center, Department of Psychosocial Oncology and Palliative Care, Boston, Massachusetts (Bernacki); Division of Aging, Brigham and Women's Hospital, Boston, Massachusetts (Bernacki); Ariadne Labs, Boston, Massachusetts (Bernacki); Harvard Medical School Center for Palliative Care, Boston, Massachusetts (Billings, Bernacki).

Corresponding Author: J. Andrew Billings, MD, Harvard Medical School Center for Palliative Care, 11½ Hilliard St, Cambridge, MA 02138 (jbillings@partners.org).

Advance care planning (ACP) includes discussing choices about end-of-life care with clinicians, family, and others; choosing and educating a durable power of attorney for health care; and ideally making informed decisions about limiting or accepting potentially life-prolonging treatments near the end of life, perhaps as documented in an advance directive (AD) or related clinician orders such as a do-not-resuscitate order (DNR). Two major strategic concerns for promoting quality in ACP discussions and AD documentation, while also wisely shepherding limited resources and achieving greater value in AD efforts, are discussed below: (1) the challenge of getting the right timing for discussions about limiting life-sustaining treatment such that the documents or orders that might be used to make choices for a decisionally incapacitated patient accurately reflect the current values, goals, and informed preferences of that patient; and (2) the related need for careful targeting of interventions to efficiently reach patients who are likely to benefit from an AD. We then discuss the use of prognostication instruments as tools to improve AD efforts.

The Timing of ACP: The Goldilocks Phenomenon

As we know from Goldilocks' adventures in the home of the 3 bears, this finicky eater found the soup too hot, too cold, or just right. Likewise, decisions about limiting life-sustaining treatment can occur too early, too late, or at just the right time.

Too Early

A host of data indicates that patients' preferences vary over time and that choices about life-sustaining treatments are context depen-

dent: different preferences are expressed when patients are healthy and presented with abstract, hypothetical choices about a distant future, compared with when they are ill and truly faced with a serious illness that may portend the end of life.¹ In general, patients choose more aggressive care early on.

Patients execute ADs with considerable uncertainty about their choices, including uncertainty about what their decisions mean.² A focus on "living wills" that offer multiple clear-cut circumstances and options for care may lead to misleading choices.³ Many patients cannot accurately recall their choices after a year,⁴ and patients (including physician-patients) regularly change their minds about ADs over the course of a year or two.⁵⁻⁷ In a national cohort of long-term care nursing home residents who were followed for 5 years after admission, of those who entered requesting cardiopulmonary resuscitation, 40% changed their minds to DNR order.⁸ The most important factors influencing change were hospitalization and nursing home transfer.

The interval between completion of an AD and death can be long. In a nationally representative sample of elderly patients (mean age at death, 83 years), the mean duration between completing an advance directive and death was 61 months (median, 37 months).⁹ In another study, living wills were completed a median of 20 months before death (mean, 43.5 months), with a range of 0 to 399 months, while a health care agent was designated a median of 19 months prior to death (mean, 43 months), with a range of 0 to 1202 months.¹⁰ The popular Physician Orders for Life Sustaining Treatment (POLST) forms recommend, but do not require, revisiting decisions on a regular basis or when the patient's condition changes.¹¹

We found no data on how often decisions documented in ADs are reviewed, but making life-or-death decisions based on an AD

Table. Prevalence of Advance Directives (AD) (Selected Studies)

Population	Year	Patients, %			
		HCP Only	AD Only	Both	Either
Age >60 y ¹⁰	2010	7	22	38	66
Inpatient intervention group ²¹	2008	21	11	24	
AARP Massachusetts Survey ²²	2005	59	48	...	...
Pew poll ²³	2005	...	29	...	...
Cognitive impairment or Alzheimer Disease ²⁴	2005	...	...	...	72
Nursing home residents aged ≥60 y ²⁵	2004	35	...	...	...
Newly admitted nursing home patients ²⁶	2001-2003	...	54-55	...	...
Pew poll ²³	1990	...	12	...	...
Health care workers ²⁷	1993	...	18	...	...
Age ≥65 y ²⁸	1993	...	33	...	...
Medicare ⁹	1993-2007	9.3	2.8	9.4	21.5
Seriously ill in SUPPORT Study ²⁹	1989-1994	...	21	...	...

Abbreviations: HCP, health care proxy; SUPPORT, Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment; ellipses, not measured in study.

created 5 years ago or even a year ago when the patient was not experiencing a life-threatening illness may violate the fundamental goal of ACP: to assure that care near the end of life is congruent with the informed patient's wishes. Advance directives prepared too early and without a mechanism to refresh them regularly risk inaccurately reflecting the patient's choices at the end of life, and their use may lead to a medical error.¹² Advance directives need to be refreshed regularly, probably at least annually for patients facing an imminently life-threatening illness, as well as whenever a serious life-threatening medical condition develops or changes significantly.

Too Late (or Never)

Research on patients with multiple life-threatening conditions, as well as many clinicians' experience in daily hospital practice, indicate that ACP is simply not done¹³ or often goes on in the emergency department or hospital when a medical crisis arises,¹⁴ even on the day of death.¹⁵ In one study from an academic medical center, only 20.3% of patients with metastatic cancer had a documented code status.¹⁶ Even when patients with advanced lung cancer were prompted electronically to complete an AD, only 34% had a code status.¹⁷ Part of the problem seems to be that patients simply do not want to think about end-of-life decisions or complete ADs,¹⁸ even after educational interventions,^{19,20} and overall completion rates for ADs are low, though apparently increasing (Table).

Physicians seeing chronically ill patients who are at high risk of death in the near future tend to avoid or defer discussing end-of-life decisions.³⁰ House staff complain that they are regularly presented with chronically ill persons who face life-or-death decisions that must be discussed emergently by a junior clinician unfamiliar with the patient.³¹ Such late discussions tend to be rushed and to focus on specific procedures or treatments that may sustain life—"do you want to be resuscitated if your heart stops?"—rather than on the underlying values, goals, and preferences that should be explored and form the basis for informed decisions.³²⁻³⁵ Among hospitalist physicians in one academic medical center, for example, code status discussions lasted an

average of 1 minute.³⁶ Finally, late discussions with patients with dementia do not allow for choices when the patient is decisionally competent.

In summary, ADs may never be discussed and documented, while those prepared too late may be rushed and inadequately represent patients' values, goals, and preferences. Medical error may ensue.¹²

Just Right

Getting timing just right is, of course, a challenge. Not only the immediacy of death but also a host of situational, religious, cultural, educational, and other factors determine whether a particular occasion and a particular kind of discussion are appropriate. We found no data on optimal timing for documenting ADs or even how expert, motivated clinicians decide to discuss or document such decisions. As discussed in the following section, we believe a better ability to prognosticate may improve targeting.

While we focus here on targeting of interventions, we also have raised concerns above about the quality of ACP discussions. Clinicians have generally not been trained to carry out such discussions.^{37,38} On the basis of our literature review, we outline ideal features of well-timed ACP in the Box.

"Just Right" Timing and Strategic Patient Selection: The Importance of Prognosis

The right time to discuss end-of-life planning depends on many factors, but one key factor is the patient's prognosis. Prognostic stratification can identify groups at high risk for facing end-of-life decisions and thus for whom targeted interventions to discuss ACP and to create ADs may be useful. Clinically, any change in prognosis, as occasioned, for instance, by an emergency transfer from a nursing home to the hospital or development of a new serious or life-threatening condition, calls for a fresh discussion of goals of care. Unfortunately, prognostication is difficult and empirical data do not offer the precision that clinicians desire, but some tools are presented here.

Box. Characteristics of a "Just Right" Advance Care Planning Discussion⁶¹⁻⁶⁴

- Patients understand their medical condition—their diagnosis, prognosis, and clinical options—and are aware of the trade-offs involved in any choices to undergo or forego potentially life-prolonging therapies
- Patients' values, goals, and preferences are elicited and later used to make choices about specific methods of life-sustaining care
- When appropriate, an involved clinician makes a recommendation, based on patients' values, goals, and preferences
- Decisions are made with adequate time for reflection, discussion with family, and further consultation
- Decisions are carefully documented, conveyed to the family, and made available to other health care practitioners.
- As the medical situation changes, especially on hospital admission or institutional transfer, choices are revisited.

Many patients want to discuss prognosis with physicians: inadequacy of prognostic information is often the greatest complaint patients and families have about end-of-life care.³⁹ Despite the importance of prognosis, physicians are often reluctant to prognosticate. In a national survey of physicians, 90% believed they should avoid being specific about prognosis.⁴⁰ Furthermore, 57% felt inadequately trained in prognostication.⁴⁰ The accuracy of physician prognostic skill has been shown to be poor. In one study, physicians were asked provide survival estimates of terminally ill patients at the time of hospice referral: physicians were accurate 20% of the time and overestimated survival by a factor of 5.3.⁴¹ In addition, longer physician-patient relationships were associated with decreased prognostic accuracy.⁴¹

Building in "triggers" that help identify patients who, on average, have less than 1 to 2 years to live may help to remind clinicians to conduct ACP discussions; such a system could ideally be embedded in electronic medical systems (EMR).¹⁷ For example, e-mail prompts were used to trigger clinicians to document code status in patients with advanced solid tumors, and at 1-year follow-up, 33.7% had a code status document in the outpatient EMR compared with 14.5% of historical controls.¹⁶

The Need for Prognostic Models

Many different pathways lead to death; the last 6 to 12 months of life for some illnesses, like cancer, are slightly more predictable⁴² than, for instance, heart failure or dementia.⁴³ Most patients die of acute complications of a chronic condition such as organ failure (approximately 20% of deaths).⁴⁴ Patients with dementia or frailty (approximately 20% of deaths) may have long periods of debility with unpredictable courses.⁴³

The "Surprise Question" has proven to be a useful method of identifying patients at high risk of dying soon, at least among patients with advanced cancer and dialysis patients. Physicians simply ask themselves, "Would I be surprised if this patient died in the next year?"⁴⁵ The hazard ratio of death in 1 year for patients with cancer whose clinician answered "no" to the Surprise Questions is 7.9, and for those undergoing dialysis, 3.6.^{45,46}

A number of studies identify triggers that could productively target timely discussion of ADs or selection of high-risk patients.⁴⁷ For

instance, hospitalization often indicates a major health transition for elderly patients. Using only 6 accessible variables (sex, congestive heart failure, cancer, creatinine and albumin levels, and Activities of Daily Living—dependency at discharge), the Walter prognostic index stratifies older adults (age >70 years) according to 1-year mortality after hospitalization.⁴⁸ Notably, age did not predict mortality in this older cohort.

Life expectancy tables can give rough estimates of prognosis but prove surprisingly unhelpful. Even at age 95 years, the patients in the lowest quartile of functional status have a mean survival of 1.1 years, compared with 2.5 years for the middle 2 quartiles.⁴⁹ Age, as a predictor of mortality in the near future, either fails to contribute to greater accuracy, or contributes less than many other factors in multiple prognostic models.^{48,50} Functional status, on the other hand, is a consistent predictor of mortality in older adults, reflecting the severity and end result of many different illnesses and psychosocial factors.⁴⁸ In the Walter index above, measures of functional status added information about risk for 1-year mortality beyond that provided by medical diagnoses or physiologic measures.⁵¹

A number of disease-specific prognostic models exist including the Seattle Heart Failure model,^{52,53} the model for end-stage liver disease (MELD),⁵⁴ and indices for renal failure.⁵⁵ However single disease models are problematic because many patients with chronic illness have multiple comorbidities.⁵⁶ In fact, 48% of Medicare beneficiaries 65 years or older had at least 3 chronic medical conditions and 21% had 5 or more.⁵⁷ A helpful prognostic toolbox that incorporates multiple comorbidities is available at <http://www.epronosis.org>.⁵¹

Advance care planning program planners can use prognostic indices to identify appropriate patients. These tools can also lend confidence to clinician judgments about prognosis and provide an objective measure that supports clinical intuition (eg, the Surprise Question). Combining clinical estimates with prognostic indices may result in more accurate estimates than either alone. More research is needed in this area, including for the use of clinical triggers.¹⁷

Caveat: How Else Might ACP Benefit Patients and Families?

We have based our evidence about the effectiveness of ADs on a single outcome: congruence between patients' wishes for end-of-life care and the care they actually receive. However, this approach should not negate the importance of other potentially beneficial outcomes. Initiating ACP well before patients are facing end-of-life decisions may serve the function of introducing the conversation and opening communication about these matters with the family, health care agent, and clinical team. Fried et al⁵⁸ and Sudore and Fried⁵⁹ have suggested that the value of ACP discussions might be judged by how early discussions prepare patients and families for later decisions—their "just in time" choices.⁵⁹ This approach is embodied in the highly regarded Respecting Choices paradigm⁶⁰ that includes the following: "First Steps," a routine discussion that normalizes such conversations in a general population; a "Next Steps" that begins ACP for patients with chronic progressive illnesses who are facing decline or complications and who might have clear notions about their prognoses and the functional outcome of their choices; and "Last

Steps” for those patients in their last year of life who might rationally request a practitioner’s order to limit attempts to sustain life. Furthermore, valuable consequences of ACP have been demonstrated in one randomized study in which families in the intervention group reported greater satisfaction with care and experienced less stress, anxiety, and depression.²¹

Conclusions

In planning interventions aimed at promoting ACP and ADs and related orders to limit life-sustaining treatments, the observations described here point to a great need to attend to strategic timing and selection of patients. Quality initiatives or pay for performance programs that aim for all patients to have ADs and provide insufficient clinician training in how to conduct ACP discussions are unlikely to be effective. Completed ADs are often inaccurate, too vague, not available, not used, or completed too early or too late. Of those tar-

geted patients who die, many are not decisionally incapacitated when choices need to be made, and only a small number without a health care proxy or AD receive care incongruent with their previously expressed wishes. Aiming ACP interventions at a broad swath of patients may have a small impact on actual care, as judged by congruence between patient wishes and actual medical management, and may even lead to medical error.

Ironically, while these observations suggest a serious challenge for planning quality improvement projects, large-scale interventions, and research in ACP, the primary care clinician or specialist who is following patients longitudinally may be in a good position to target many appropriate patients for ACP. Guided by the “Surprise Question,” general awareness of patients’ risk of dying soon or the use of prognostic indices, high-risk patients with identified poor functional status and significant comorbidities might readily define a target group in clinical practice—those at high risk for death in the foreseeable future and for whom the time is “just right” to discuss and document choices about end-of-life care.

ARTICLE INFORMATION

Accepted for Publication: December 10, 2013.

Published Online: February 3, 2014.
doi:10.1001/jamainternmed.2013.14384.

Author Contributions: Dr Billings had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Billings, Bernacki.

Acquisition of data: Billings.

Analysis and interpretation of data: Billings, Bernacki.

Drafting of the manuscript: Billings, Bernacki.

Critical revision of the manuscript for important intellectual content: Billings, Bernacki.

Administrative, technical, and material support: Billings, Bernacki.

Study supervision: Billings.

Conflict of Interest Disclosures: None reported.

Funding/Support: Dr Bernacki is supported by grant 1K01 HP 20462 from the Health Resources and Services Administration.

Role of the Sponsor: The Health Resources and Services Administration had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

REFERENCES

- Ditto PH, Jacobson JA, Smucker WD, Danks JH, Fagerlin A. Context changes choices: a prospective study of the effects of hospitalization on life-sustaining treatment preferences. *Med Decis Making*. 2006;26(4):313-322.
- Sudore RL, Schillinger D, Knight SJ, Fried TR. Uncertainty about advance care planning treatment preferences among diverse older adults. *J Health Commun*. 2010;15(suppl 2):159-171.
- Winter L, Parks SM, Diamond JJ. Ask a different question, get a different answer: why living wills are poor guides to care preferences at the end of life. *J Palliat Med*. 2010;13(5):567-572.

- Sharman SJ, Garry M, Jacobsen JA, Loftus EF, Ditto PH. False memories for end-of-life decisions. *Health Psychol*. 2008;27(2):291-296.
- Lockhart LK, Ditto PH, Danks JH, Coppola KM, Smucker WD. The stability of older adults’ judgments of fates better and worse than death. *Death Stud*. 2001;25(4):299-317.
- Wittink MN, Morales KH, Meoni LA, et al. Stability of preferences for end-of-life treatment after 3 years of follow-up: the Johns Hopkins Precursors Study. *Arch Intern Med*. 2008;168(19):2125-2130.
- Janssen DJ, Spruit MA, Schols JM, et al. Predicting changes in preferences for life-sustaining treatment among patients with advanced chronic organ failure. *Chest*. 2012;141(5):1251-1259.
- Mukamel DB, Ladd H, Temkin-Greener H. Stability of cardiopulmonary resuscitation and do-not-resuscitate orders among long-term nursing home residents. *Med Care*. 2013;51(8):666-672.
- Bischoff KE, Sudore R, Miao Y, Boscardin WJ, Smith AK. Advance care planning and the quality of end-of-life care in older adults. *J Am Geriatr Soc*. 2013;61(2):209-214.
- Silveira MJ, Kim SY, Langa KM. Advance directives and outcomes of surrogate decision making before death. *N Engl J Med*. 2010;362(13):1211-1218.
- Physician Orders for Life-Sustaining Treatment Paradigm web site. <http://www.ohsu.edu/polst/>. Accessed January 7, 2011.
- Allison TA, Sudore RL. Disregard of patients’ preferences is a medical error. *JAMA Intern Med*. 2013;173(9):787.
- Heyland DK, Barwich D, Pichora D, et al; ACCEPT (Advance Care Planning Evaluation in Elderly Patients) Study Team; Canadian Researchers at the End of Life Network (CARENET). Failure to engage hospitalized elderly patients and their families in advance care planning. *JAMA Intern Med*. 2013;173(9):778-787.
- Camhi SL, Mercado AF, Morrison RS, et al. Deciding in the dark: advance directives and continuation of treatment in chronic critical illness. *Crit Care Med*. 2009;37(3):919-925.

- Levin TT, Li Y, Weiner JS, et al. How do-not-resuscitate orders are utilized in cancer patients: timing relative to death and communication-training implications. *Palliat Support Care*. 2008;6(4):341-348.
- Temel JS, Greer JA, Admane S, et al. Code status documentation in the outpatient electronic medical records of patients with metastatic cancer. *J Gen Intern Med*. 2010;25(2):150-153.
- Temel JS, Greer JA, Gallagher ER, et al. Electronic prompt to improve outpatient code status documentation for patients with advanced lung cancer. *J Clin Oncol*. 2013;31(6):710-715.
- Hofmann JC, Wenger NS, Davis RB, et al. Patient preferences for communication with physicians about end-of-life decisions: SUPPORT Investigators: Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment. *Ann Intern Med*. 1997;127(1):1-12.
- Bravo G, Dubois MF, Wagneur B. Assessing the effectiveness of interventions to promote advance directives among older adults: a systematic review and multi-level analysis. *Soc Sci Med*. 2008;67(7):1122-1132.
- Evangelista LS, Motie M, Lombardo D, Ballard-Hernandez J, Malik S, Liao S. Does preparedness planning improve attitudes and completion of advance directives in patients with symptomatic heart failure? *J Palliat Med*. 2012;15(12):1316-1320.
- Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: randomised controlled trial. *BMJ*. 2010;340:c1345.
- Dinger E. *AARP Massachusetts End of Life Survey*. Washington, DC: AARP; 2005.
- Keeter S. *Strong Public Support for Right to Die*. Washington, DC: The Pew Research Center for the People and the Press; 2006.
- Garand L, Dew MA, Lingler JH, DeKosky ST. Incidence and predictors of advance care planning among persons with cognitive impairment. *Am J Geriatr Psychiatry*. 2011;19(8):712-720.

25. Morrison RS, Meier DE. High rates of advance care planning in New York City's elderly population. *Arch Intern Med*. 2004;164(22):2421-2426.
26. Morrison RS, Chichin E, Carter J, Burack O, Lantz M, Meier DE. The effect of a social work intervention to enhance advance care planning documentation in the nursing home. *J Am Geriatr Soc*. 2005;53(2):290-294.
27. Orlander JD. Use of advance directives by health care workers and their families. *South Med J*. 1999;92(5):481-484.
28. Gordon NP, Shade SB. Advance directives are more likely among seniors asked about end-of-life care preferences. *Arch Intern Med*. 1999;159(7):701-704.
29. Teno JM, Licks S, Lynn J, et al. Do advance directives provide instructions that direct care? SUPPORT Investigators: Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatment. *J Am Geriatr Soc*. 1997;45(4):508-512.
30. Barclay S, Momen N, Case-Upton S, Kuhn I, Smith E. End-of-life care conversations with heart failure patients: a systematic literature review and narrative synthesis. *Br J Gen Pract*. 2011;61(582):e49-e62.
31. Szmuiłowicz E, el-Jawahri A, Chiappetta L, Kamdar M, Block S. Improving residents' end-of-life communication skills with a short retreat: a randomized controlled trial. *J Palliat Med*. 2010;13(4):439-452.
32. Singer PA, Martin DK, Lavery JV, Thiel EC, Kelner M, Mendelsohn DC. Reconceptualizing advance care planning from the patient's perspective. *Arch Intern Med*. 1998;158(8):879-884.
33. Singer PA, Martin DK, Kelner M. Quality end-of-life care: patients' perspectives. *JAMA*. 1999;281(2):163-168.
34. Steinhilber KE, Christakis NA, Clipp EC, McNeilly M, McIntyre L, Tulskey JA. Factors considered important at the end of life by patients, family, physicians, and other care providers. *JAMA*. 2000;284(19):2476-2482.
35. Winter L. Patient values and preferences for end-of-life treatments: are values better predictors than a living will? *J Palliat Med*. 2013;16(4):362-368.
36. Anderson WG, Chase R, Pantilat SZ, Tulskey JA, Auerbach AD. Code status discussions between attending hospitalist physicians and medical patients at hospital admission. *J Gen Intern Med*. 2011;26(4):359-366.
37. Danis M, Federman D, Fins JJ, et al. Incorporating palliative care into critical care education: principles, challenges, and opportunities. *Crit Care Med*. 1999;27(9):2005-2013.
38. Holley JL, Carmody SS, Moss AH, et al. The need for end-of-life care training in nephrology: national survey results of nephrology fellows. *Am J Kidney Dis*. 2003;42(4):813-820.
39. Hanson LC, Danis M, Garrett J. What is wrong with end-of-life care? opinions of bereaved family members. *J Am Geriatr Soc*. 1997;45(11):1339-1344.
40. Christakis NA, Iwashyna TJ. Attitude and self-reported practice regarding prognostication in a national sample of internists. *Arch Intern Med*. 1998;158(21):2389-2395.
41. Christakis NA, Lamont EB. Extent and determinants of error in doctors' prognoses in terminally ill patients: prospective cohort study. *BMJ*. 2000;320(7233):469-472.
42. Krishnan M, Temel JS, Wright AA, Bernacki R, Selvaggi K, Balboni T. Predicting life expectancy in patients with advanced incurable cancer: a review. *J Support Oncol*. 2013;11(2):68-74.
43. Lunney JR, Lynn J, Foley DJ, Lipson S, Guralnik JM. Patterns of functional decline at the end of life. *JAMA*. 2003;289(18):2387-2392.
44. Lunney JR, Lynn J, Hogan C. Profiles of older Medicare decedents. *J Am Geriatr Soc*. 2002;50(6):1108-1112.
45. Moss AH, Lunney JR, Culp S, et al. Prognostic significance of the "surprise" question in cancer patients. *J Palliat Med*. 2010;13(7):837-840.
46. Moss AH, Ganjoo J, Sharma S, et al. Utility of the "surprise" question to identify dialysis patients with high mortality. *Clin J Am Soc Nephrol*. 2008;3(5):1379-1384.
47. Smith AK, Williams BA, Lo B. Discussing overall prognosis with the very elderly. *N Engl J Med*. 2011;365(23):2149-2151.
48. Walter LC, Brand RJ, Counsell SR, et al. Development and validation of a prognostic index for 1-year mortality in older adults after hospitalization. *JAMA*. 2001;285(23):2987-2994.
49. Walter LC, Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. *JAMA*. 2001;285(21):2750-2756.
50. Mitchell SL, Miller SC, Teno JM, Kiely DK, Davis RB, Shaffer ML. Prediction of 6-month survival of nursing home residents with advanced dementia using ADEPT vs hospice eligibility guidelines. *JAMA*. 2010;304(17):1929-1935.
51. Yourman LC, Lee SJ, Schonberg MA, Widera EW, Smith AK. Prognostic indices for older adults: a systematic review. *JAMA*. 2012;307(2):182-192.
52. Levy WC, Mozaffarian D, Linker DT, et al. The Seattle Heart Failure Model: prediction of survival in heart failure. *Circulation*. 2006;113(11):1424-1433.
53. Mozaffarian D, Anker SD, Anand I, et al. Prediction of mode of death in heart failure: the Seattle Heart Failure Model. *Circulation*. 2007;116(4):392-398.
54. Wiesner R, Edwards E, Freeman R, et al; United Network for Organ Sharing Liver Disease Severity Score Committee. Model for end-stage liver disease (MELD) and allocation of donor livers. *Gastroenterology*. 2003;124(1):91-96.
55. Cohen LM, Ruthazer R, Moss AH, Germain MJ. Predicting six-month mortality for patients who are on maintenance hemodialysis. *Clin J Am Soc Nephrol*. 2010;5(1):72-79.
56. Marengoni A, Rizzuto D, Wang HX, Winblad B, Fratiglioni L. Patterns of chronic multimorbidity in the elderly population. *J Am Geriatr Soc*. 2009;57(2):225-230.
57. Wolff JL, Starfield K, Anderson G. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Arch Intern Med*. 2002;162(20):2269-2276.
58. Fried TR, Bullock K, Iannone L, O'Leary JR. Understanding advance care planning as a process of health behavior change. *J Am Geriatr Soc*. 2009;57(9):1547-1555.
59. Sudore RL, Fried TR. Redefining the "planning" in advance care planning: preparing for end-of-life decision making. *Ann Intern Med*. 2010;153(4):256-261.
60. Respecting Choices: The Staged Approach to Advance Care Planning. <http://www.gundersenhealth.org/respecting-choices/about-us/stages-of-planning>. Accessed November 26, 2013.
61. Kirchoff KT, Hammes BJ, Kehl KA, Briggs LA, Brown RL. Effect of a disease-specific planning intervention on surrogate understanding of patient goals for future medical treatment. *J Am Geriatr Soc*. 2010;58(7):1233-1240.
62. Clayton JM, Butow PN, Tattersall MH. When and how to initiate discussion about prognosis and end-of-life issues with terminally ill patients. *J Pain Symptom Manage*. 2005;30(2):132-144.
63. Briggs L. Shifting the focus of advance care planning: using an in-depth interview to build and strengthen relationships. *J Palliat Med*. 2004;7(2):341-349.
64. Kirchoff KT, Hammes BJ, Kehl KA, Briggs LA, Brown RL. Effect of a disease-specific advance care planning intervention on end-of-life care. *J Am Geriatr Soc*. 2012;60(5):946-950.