dents and students can derive an ambivalent approach to value. Particularly in academic centers where resources seem limitless, attending physicians often suggest additional tests that expand exhaustive differential diagnoses. This builds on trainees’ gnawing fear of missing something to establish thoroughness as an unrestrained virtue. The pressures of individualized quality metrics along with compressed inpatient evaluations to minimize length of stay may further reinforce this mindset and encourage defensive testing. These practices contradict and displace discussions of value.

The research letter by Pierce et al in this issue of *JAMA Internal Medicine* underscores the unrealized potential of rounds to teach high value. Pierce et al observed 168 patient encounters on internal medicine rounds and recorded how often an attending physician invoked the American College of Physicians’ test-ordering appropriateness criteria. Attending physicians only discussed appropriate test ordering during 35 (20.8%) of 168 patient encounters. They most often brought up whether a test affected care (23 encounters [13.7%]) and rarely discussed whether a test would cause harm (4 encounters [2.4%]).

There is no standard on how often attending physicians should discuss value with trainees, and conversations that residents initiated about value were not captured in the study. However, the findings are in line with surveys of program directors, medical students, and residents who all noted missed opportunities for faculty to model these skills.

How might educators change the culture of rounds from rewarding meticulousness to celebrating moderation? Just as we challenge trainees to explain their diagnostic reasoning, so too should we probe them to justify the use of tests and resources. Attending physicians should model the confidence needed to enact a stepwise diagnostic workup. In addition to using evidence-based guidelines, we should reemphasize history and physical examination findings to refine and guide diagnostic workup. Finally, we should study such interventions to determine whether they affect practices as well as attitudes.

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Timeliness of End-of-Life Discussions for Blood Cancers: A National Survey of Hematologic Oncologists

Existing studies suggest a quality gap with respect to end-of-life (EOL) care for patients with blood cancers, and less timely EOL discussions may be partly to blame. Indeed, patients with blood cancers are more likely to receive chemotherapy and be hospitalized when near death, to die in acute care settings, and are less likely to use hospice services than those with advanced solid tumors. A rigorous understanding of when EOL discussions occur for patients with hematologic cancers is a necessary step toward developing targeted interventions to improve the quality of their EOL care.

**Methods** | From September 16, 2014, through January 21, 2015, we conducted a postal survey of US hematologists who provide direct care for adult patients with hematologic cancers, whom we identified from the clinical directory of the American Society of Hematology. We developed the survey instrument through a synthesis of preliminary data from a series of focus groups with hematologic oncologists, a review of the relevant literature, previously published survey instruments, and formal cognitive debriefing.

To assess the timing of EOL discussions, we asked, “In your experience, end-of-life care discussions with patients who have hematologic cancers typically occur...,” with the response options of “too early,” “at the right time,” or “too late.” In addition, we examined the timing of initial conversations about specific aspects of EOL care by asking, “For patients with life-threatening hematologic cancers, when do you typically conduct the initial discussion specifically addressing resuscitation status?” with the response options of “upon presentation or diagnosis,” “during a period of stability,” “upon disease progression,” “during an acute hospitalization,” and “when death is clearly imminent.” The same stem and responses were used to ask about initial discussions regarding hospice care and preferred site of death.

This study was approved by the Dana-Farber/Harvard Cancer Center Institutional Review Board.

**Results** | Of the 609 eligible hematologic oncologists, 349 (57.3%) completed the survey. Their median age was 52 years, and 75.4% were men. Overall, 42.9% of the hematologists who completed the survey practiced primarily in tertiary centers and 55.4% practiced in community centers. Of the 345 individuals who answered the question about typical timing of EOL discussions, 55.9% reported that, in their experience, these discussions occur “too late.” Respondents in tertiary centers were more likely to report late EOL discussions than those in community centers (64.9% vs 48.7%, *P* = .003) (Table 1), an association that remained significant in multivariable analysis. As for specific topics of EOL care, 42.5% of the respondents reported conducting their first conversation about resuscitation status at less optimal times; 23.2% and 39.9%, respectively, reported that they typically wait until death is clearly imminent before conducting an initial conversation about hospice care or preferred site of death (Table 2). Moreover, hematologic oncologists at tertiary centers were less likely to initiate hospice and resuscitation status discussions at more optimal times than were those at community centers.

Letters
Several factors may contribute to untimely EOL discussions in hematologic oncology. First, unlike most solid malignant neoplasms, which are incurable when they reach an advanced stage (stage IV), many advanced hematologic cancers remain potentially curable. This lack of a clear distinction between the curative and EOL phase of disease for many hematologic cancers may delay the initiation of appropriate EOL discussions. Second, physicians may hesitate to conduct EOL discussions because of fear of affecting patients’ emotional coping capacity and hope or because physicians themselves find it difficult to “give up” on patients they might potentially have cured.

### Table 1. Univariable and Multivariable Analyses of Characteristics Associated With 345 Hematologic Oncologists’ Reports of Typical Timing of EOL Discussions

<table>
<thead>
<tr>
<th>Characteristic of Hematologic Oncologist</th>
<th>Univariable Analysis &quot;Too Late,&quot; %</th>
<th>Multivariable Logistic Regression Analysis Outcome Modeled as Typical EOL Discussion &quot;Too Late&quot;b</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>55.9</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54.2</td>
<td>0.78 (0.47-1.30), 0.34P = 0.79</td>
</tr>
<tr>
<td>Female</td>
<td>61.2</td>
<td>1 [Reference]</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤40</td>
<td>57.8</td>
<td>0.79</td>
</tr>
<tr>
<td>&gt;40</td>
<td>55.7</td>
<td></td>
</tr>
<tr>
<td>Years since medical school graduation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;15</td>
<td>54.5</td>
<td>1 [Reference], 0.59</td>
</tr>
<tr>
<td>≤15</td>
<td>58.1</td>
<td>1.09 (0.64-1.87), 0.74</td>
</tr>
<tr>
<td>Closely affiliated with academic center</td>
<td>58.4</td>
<td>0.24</td>
</tr>
<tr>
<td>Not closely affiliated with academic center</td>
<td>51.9</td>
<td></td>
</tr>
<tr>
<td>Primary practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community centera</td>
<td>48.7</td>
<td>1.09 (0.64-1.87), 0.003</td>
</tr>
<tr>
<td>Tertiary center</td>
<td>64.9</td>
<td>1.92 (1.23-3.00), 0.004</td>
</tr>
<tr>
<td>Provides autotransplant or allotransplant services</td>
<td>61.2</td>
<td></td>
</tr>
<tr>
<td>Does not provide transplant services</td>
<td>52.4</td>
<td></td>
</tr>
<tr>
<td>Palliative care or hospice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation</td>
<td>60.6</td>
<td></td>
</tr>
<tr>
<td>No rotation</td>
<td>54.8</td>
<td></td>
</tr>
<tr>
<td>No. of deceased patients with HM in past 12 mo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤10</td>
<td>54.6</td>
<td></td>
</tr>
<tr>
<td>&gt;10</td>
<td>57.4</td>
<td></td>
</tr>
<tr>
<td>Feels knowledgeable enough to discuss EOL options with patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than strongly agree</td>
<td>62.9</td>
<td>1.09 (0.64-1.87), 0.59</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>51.0</td>
<td>0.64 (0.41-1.01), 0.55</td>
</tr>
<tr>
<td>Feels comfortable discussing DNR status with patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than strongly agree</td>
<td>62.5</td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>52.8</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midwest</td>
<td>62.2</td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>48.1</td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>60.7</td>
<td></td>
</tr>
<tr>
<td>West</td>
<td>51.9</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: DNR, do not resuscitate; EOL, end-of-life; HM, hematologic malignant neoplasms; OR, odds ratio.

* Percentages are row percentages. For example, 61.2% of female hematologic oncologists reported late EOL discussions, whereas 54.2% of male hematologic oncologists reported late EOL discussions.

* Sex and number of years since medical school graduation were forced into the multivariable model regardless of statistical significance. All other covariates were included in the model if they reached the significance threshold of P < .05 in univariable analysis. Values of OR > 1 represent higher odds of having EOL discussions too late.

* Community center includes hematologic oncologists who practice solely in community centers and those with a hybrid practice in community and tertiary centers.

### Table 2. Hematologic Oncologists’ Responses to the Survey Itemsa

<table>
<thead>
<tr>
<th>Item</th>
<th>Timing of Initial Discussion, %</th>
<th>Univariable Analysis &quot;Too Late,&quot; %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resuscitation status</td>
<td>15.5</td>
<td>11.9</td>
</tr>
<tr>
<td>Hospice care</td>
<td>3.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Preferred site of death</td>
<td>2.7</td>
<td>6.5</td>
</tr>
</tbody>
</table>

*a n = 336. Survey participants were asked, “For patients with life-threatening hematologic cancers, when do you typically conduct the initial discussion specifically addressing...”

*b Represents potentially more optimal times for initial discussion.
Moreover, although tertiary settings often have greater availability of EOL resources and/or offer academic departments of palliative care, hematologic oncologists in these settings were more likely to report late EOL discussions. They were also less likely to initiate conversations about resuscitation status or hospice care at more optimal times. These findings suggest the need for physician-targeted interventions for improving the timeliness of EOL discussions, especially for patients with hematologic cancers treated in tertiary settings.

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Invited Commentary
Addressing End-of-Life Quality Gaps in Hematologic Cancers: The Importance of Early Concurrent Palliative Care

Although many patients with hematologic cancers are cured, many are not. It is estimated that more than 55 000 Americans will die of leukemia, lymphoma, or multiple myeloma in 2015, many more than the annual deaths from common cancers such as breast cancer. Despite this, surprisingly little attention is given to palliative and end-of-life (EOL) issues in hematologic cancers. Yet the quality gap is clear: these patients are less likely to use hospice services, more likely to die in the hospital, and less likely to see a palliative care specialist. Now, however, after many years of relative silence there is hope on the horizon. Several key studies, including the article by Odejide et al, have recently appeared in the literature, each illuminating unique palliative and EOL issues in hematologic cancers.

First, it is increasingly clear that patients with hematologic cancer differ from those with solid tumors. For example, many may not actually want to die at home, despite common assumptions and contrary to knowledge about patients with solid tumors. A population-based survey of more than 300 decedents with hematologic cancer found that more than 28% of those reporting a preference wanted an in-hospital death, and that another 5.6% preferred a nursing-home death. With the development of improved models of care for patients with hematologic cancer, it is necessary to consider that they may have different perspectives than patients with solid tumors. Because the treatments for these 2 kinds of cancers are often quite different, it is likely that the experiences of patients who have them are probably also different. We must consider these perspectives as we address end-of-life quality gaps.

Second, the physicians who treat hematologic cancers differ from those who treat solid tumors. For example, specialists in hematologic cancers think differently about trade-offs in risks and benefits of aggressive cancer care. A survey of 182 oncologists at a tertiary care center found that hematologic oncologists were more likely than solid-tumor oncologists to favor chemotherapy with moderate toxic effects and no survival benefit for patients with poor function and a 1-month life expectancy. Similarly, hematologic oncologists reported less comfort discussing EOL issues and were more likely to report a sense of failure on disease progression than were solid-tumor oncologists. Given that hematologic malignancies are often quite different in their responsiveness to chemotherapy and intensity of treatment (stem-cell transplantation, high-dose chemotherapies, etc), it makes sense that oncologists who treat these diseases would also have a different perspective. Evidence also suggests that hematologic oncologists are more likely to view palliative care as only late-stage terminal care or hospice care, whereas solid-tumor specialists more often recognize palliative care as a specialty that provides additional support to those facing a serious illness. To date, however, the unique features of these specialists remain underexplored.

In this issue, Odejide et al3 shed more light on this subject, enriching the understanding of hematologic oncologists’ perspectives. In their national survey of hematologic oncologists in the United States, 3 important findings emerged. First, 56% of hematologic oncologists believed that EOL discussions occur too late. Second, respondents at tertiary care centers were even more likely to report late discussions than
those in the community. Third, many respondents reported waiting until a patient’s death was imminent before discussing EOL issues.

These findings are important. They provide a better sense of hematologic oncologists’ awareness of gaps in the quality of EOL care, confirming that hematologic oncologists generally do not have their “heads in the sand” about how they tend to practice. Even more importantly, these findings suggest that hematologic oncologists are uncertain about how to actually change the status quo of EOL issues, thereby highlighting a practice gap in need of an intervention. As a practicing hematologic oncologist and a palliative care physician, I believe that the field of hematology should look to specialty palliative care for the answer to this need.

A robust literature demonstrates that early, concurrent palliative care yields many benefits for patients and caregivers facing advanced cancer, including improved prognostic awareness, better quality of life, and less depression.7 It is increasingly clear that the mechanism of action of palliative care has much to do with adding a uniquely skilled expert to further support the patient and family beyond the support provided through standard cancer care. Although some oncologists worry that this amounts to an abrogation of their personal responsibility to address important issues with their patients, data show that patients prefer to talk about different issues with their oncologist than with their palliative care specialist.8 Together, everyone accomplishes more, and each team member complements the others. Unfortunately, landmark studies of early palliative care have largely excluded patients with hematologic cancers.

If palliative care is the answer to the problems in the quality of EOL care in hematologic cancers, researchers must study and better understand the unique needs of patients with hematologic cancers and their oncologists. For example, comparatively little is known about the symptom burden and palliative care needs of patients with hematologic cancers, which are a remarkably heterogeneous collection of diseases. Similarly, hematologic oncologists and palliative care specialists together must better understand the unique needs of the specialists who treat these patients as we develop models of concurrent palliative care. Building bridges with colleagues in palliative care is the next step toward reducing gaps in the quality of EOL care of patients with hematologic cancers, and will enable cancer centers, cancer care teams, and specialists to better serve their patients and their patients’ families together as a unified team.

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Letters


Comparison of Radiation Doses and Best-Practice Use for Myocardial Perfusion Imaging in US and Non-US Laboratories: Findings From the IAEA (International Atomic Energy Agency) Nuclear Cardiology Protocols Study

Myocardial perfusion imaging (MPI) is integral to the diagnosis and management of known or suspected coronary artery disease1-2 and is therefore performed on millions of US patients each year. However, the associated exposure to ionizing radiation has raised concerns about potential radiation-related health effects. The recent cross-sectional study of MPI practice conducted by the International Atomic Energy Agency (IAEA) demonstrated significant variations in radiation doses, and in the use of best practices that can help to reduce dose, among laboratories worldwide.3 Although survey data have described self-reported US use of different MPI protocols and some dose-reduction methods, 4 no previous study, to our knowledge, has characterized actual US MPI radiation doses as well as use of best practices. We compared actual MPI practice and radiation doses in US and non-US laboratories and identified opportunities to improve radiation doses in the United States.

Methods | Data were collected as part of the IAEA Nuclear Cardiology Protocols Study (INCAPS).3 The INCAPS data included patient demographics, estimated effective radiation dose for each patient, and laboratory best practices that affect radiation dose, from 308 nuclear cardiology laboratories in 65 countries, including 50 US laboratories in 22 states encompassing all regions of the country. Each laboratory provided data on a consecutive series of patients undergoing MPI during a 1-week period from March 18 to April 22, 2013, yielding 7911 patients (including 1902 US patients). The study was approved by the institutional review board of Columbia University. Because no individually identifiable