



## An Official American Thoracic Society/American Association of Critical-Care Nurses/American College of Chest Physicians/Society of Critical Care Medicine Policy Statement: The Choosing Wisely® Top 5 List in Critical Care Medicine

Scott D. Halpern, Deborah Becker, J. Randall Curtis, Robert Fowler, Robert Hyzy, Lewis J. Kaplan, Nishi Rawat, Curtis N. Sessler, Hannah Wunsch, and Jeremy M. Kahn; on behalf of the Choosing Wisely Taskforce

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**Rationale:** The high costs of health care in the United States and other developed nations are attributable, in part, to overuse of tests, treatments, and procedures that provide little to no benefit for patients. To improve the quality of care while also combating this problem of cost, the American Board of Internal Medicine Foundation developed the Choosing Wisely Campaign, tasking professional societies to develop lists of the top five medical services that patients and physicians should question.

**Objectives:** To present the Critical Care Societies Collaborative's Top 5 list in Critical Care Medicine and describe its development.

**Methods:** Each professional society in the Collaborative nominated members to the Choosing Wisely task force, which established explicit criteria for evaluating candidate items, generated lists of items, performed literature reviews on each, and sought external input from content experts. Task force members narrowed the list to the Top 5 items using a standardized scoring system based on each item's likely overall impact and merits on the five explicit criteria.

**Measurements and Main Results:** From an initial list of 58 unique recommendations, the task force proposed a Top 5 list that was ultimately endorsed by each Society within the Collaborative. The five recommendations are: (1) do not order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions; (2) do not transfuse red blood cells in hemodynamically stable, nonbleeding ICU patients with an Hb concentration greater than 7 g/dl; (3) do not use parenteral nutrition in adequately nourished critically ill patients within the first 7 days of an ICU stay; (4) do not deeply sedate mechanically ventilated patients without a specific indication and without daily attempts to lighten sedation; and (5) do not continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.

**Conclusions:** These five recommendations provide a starting point for clinicians and patients to make decisions leading to higher-quality, lower-cost care. Future work is needed to promote adherence to these recommendations and to develop additional ways for intensive care clinicians to take leadership in reining in health-care costs.

**Keywords:** Choosing Wisely; critical care; quality improvement; cost effectiveness

### Introduction

In 2012, the United States spent \$2.87 trillion on health care, accounting for 18.3% of its Gross Domestic Product. In recent years, roughly \$100 billion, or 0.66% of U.S. Gross Domestic Product, has been spent on the provision of critical care (1). For this reason, hospital leaders, payers, and policy

makers interested in opportunities for cost reduction frequently focus on the intensive care unit (ICU).

One factor contributing to the high cost of critical care may be clinician decision making at the bedside. Data indicate that intensivists vary widely in their daily discretionary spending, with no correlation between physicians' spending and their

patients' outcomes (2). More broadly, evidence suggests that physicians' decisions contribute importantly to the high and rising costs of health care in the United States (3–5). Thus, in an effort to improve quality and reduce costs, the American Board of Internal Medicine Foundation launched the Choosing Wisely Campaign in 2011 to identify tests or interventions

Correspondence and requests for reprints should be addressed to Scott D. Halpern, M.D., Ph.D., University of Pennsylvania, 719 Blockley Hall, 423 Guardian Drive, Philadelphia, PA 19104. E-mail: shalpern@exchange.upenn.edu

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### Discussion

“that physicians and patients should question” (6, 7).

The seeds of Choosing Wisely Campaign stem from the Physician Charter for Medical Professionalism produced by the American Board of Internal Medicine Foundation, the American College of Physicians, and the European Federation of Internal Medicine (8). The Charter moved beyond older conceptualizations of medical professionalism by noting that “physicians are *required* to provide health care that is based on the wise and cost-effective management of limited clinical resources [emphasis added].”

Based on this model, medical ethicist Howard Brody subsequently charged physicians to “seize the moral high ground” and take leadership in declaring what tests and interventions should be used less commonly (9). He noted that if physicians failed to lead in this area, they would be forced to follow cost-cutting measures imposed by politicians or payers (9). Brody recommended that each professional society appoint a panel to decide that specialty’s “Top 5” list of “diagnostic tests or treatments that are very commonly ordered by members of that specialty, that are among the most expensive services provided, and that have been shown by the currently available evidence not to provide any meaningful benefit to at least some major categories of patients” (9). This policy statement describes this initiative in critical care medicine, discusses the process and rationale for selecting each of the Top 5 items in critical care, and discusses important next steps for clinicians to lead the way toward the more efficient provision of critical care.

## Methods

### Origins of the Critical Care Societies Collaborative Choosing Wisely Initiative

This initiative was proposed by the first author and championed by the last author in his role as Chair of the American Thoracic Society’s Quality Improvement Committee, in June 2012. A Memorandum of Understanding was signed in September of 2012 by the four societies in the Critical Care Societies Collaborative: the American Association of Critical-Care Nurses, the American College of Chest Physicians, the American Thoracic Society, and the Society of Critical Care Medicine. Each of these societies was invited to nominate members to join a task force charged with developing the critical care Top 5 list. The final task force included the 10 authors, representing all four societies and spanning the clinical disciplines of critical care medicine, including internal medicine, surgery, anesthesiology, emergency medicine, and critical care nursing.

This task force was charged with developing a list of five “low-value” practices in the field of critical care medicine—that is, practices that are unlikely to provide benefits to patients, and even if they did, the benefits would be

insufficient to justify the expenditures (10). The charge was not to develop a clinical practice guideline, because the methods, conducted in accordance with other lists developed as part of the Choosing Wisely campaign, did not adhere to the guideline standards of the Institute of Medicine.

### Development of Draft Recommendations

During an initial meeting in Boston, Massachusetts in September 2012, we established task force goals and criteria for evaluating recommendations. The agreed-on evaluative criteria, which members could weigh at their discretion in proposing items, are listed in Table 1. We selected these criteria to help us focus on recommendations that were likely to be (1) correct (i.e., supported by evidence), (2) important (i.e., have high prevalence, significance for patients, and associated costs), (3) germane to practitioners of critical care medicine (as opposed to medical professionals more generally), and (4) novel.

Next, task force members submitted lists of suggested items. The first author accumulated all submitted items, removed duplicates, and organized the items into five broad categories: diagnostic tests, therapies, procedures, end-of-life care, and structures of care. There were 58 unique items on this “initial” list.

During subsequent teleconferences, members discussed each item in turn, using an iterative consensus process to narrow this list through consensus to 16 items. Task force members then formally prioritized these 16 items, such that items were retained if a majority of task force members believed the item had a reasonable chance of making the final Top 5 list. Nine items were retained, and, for each, one or two members were assigned to conduct in-depth evidence reviews and consult with external content experts.

The nine evidence-informed summaries were reviewed by teleconference in November 2012, during which the group deliberated each item’s performance on the five evaluation criteria (Table 1). Members subsequently rated each item independently using a National Institutes of Health–style scale from 1 to 9, where 1 is the best possible rating. Ratings were provided for each of the five criteria, and an overall impact rating was provided for each item.

**Table 1.** Criteria on Which Each Proposed Item Was Evaluated

1. Strength of evidence: How sure are we that our suggestion is correct?
2. Prevalence: How commonly do we think this issue arises?
3. Aggregate cost: How large are the anticipated cost savings if this suggestion is adhered to?
4. Relevance: To what extent is this either a “core” or “unique” part of the practice of critical care medicine, as opposed to an ancillary activity or part of good medical practice more generally?
5. Innovation: How much does this suggestion represent an advance (i.e., “move the needle”) rather than recapitulate known best practices or previously published clinical guidelines?

Task force members were instructed that the overall rating need not be an average of the five criteria ratings, enabling members to weigh the criteria as they deemed most appropriate.

Members submitted their ratings to the first author, who summed and averaged the five criterion scores and the overall impact scores. The items with the best overall impact scores were retained in the “penultimate” list. All members then contributed textual edits for these five items as well as to the one-paragraph summaries accompanying each item.

### Vetting and Endorsement

This penultimate list was submitted to the four societies’ executive committees for review. The executive committees sought external feedback from other content experts and provided written suggestions to the task force. The task force considered all suggestions and revised items’ descriptions based on this feedback. The first author and members of the societies’ executive committees resolved disagreements by consensus and compromise via teleconference. This process led to the inclusion of new evidence that informed the wording of the five items, but the actual recommendations themselves and the core elements of the rationale supporting each item were retained. The final list was then sent back to four societies’ executive committees for consideration of final endorsement. Each society endorsed the list in February 2013. This final list was submitted to the Choosing Wisely Campaign in March 2013, approved in May 2013, and published by the Campaign in January 2014.

## Results

The five recommendations of the Critical Care Societies Collaborative Choosing

Wisely task force are listed in Table 2. Each recommendation is accompanied by a single paragraph providing a brief rationale for the recommendation. In the following sections we provide more detailed analyses of the reasons we chose each of these items, the evidence supporting the items, and of how each item scored on certain evaluative criteria.

### **Recommendation #1: Do Not Order Diagnostic Tests at Regular Intervals (Such as Every Day), But Rather in Response to Specific Clinical Questions**

Whether due to convenience or perceived indications, intensivists commonly order diagnostic tests such as complete blood counts, serum chemistries, chest radiographs, and arterial blood gas analyses on a routine basis (e.g., daily) (11). However, all available evidence suggests that routine diagnostic evaluations, rather than tests ordered to answer specific clinical questions, carry measurable burdens and costs for patients, hospitals, and the health-care system (12–14). For example, routine phlebotomy causes iatrogenic anemia, leading ICU patients to receive extra transfusions of red blood cells (RBCs), raising costs and conferring risks of alloimmunization, transfusion-related acute lung injury, transfusion-associated circulatory overload, infection, and organ failure (15). Computer order entry that incorporates decision aids has been shown to reduce duplicative order sets and inappropriate daily laboratory testing, thereby reducing phlebotomy rates and enabling more efficient use of health-care personnel (13, 14).

Similarly, evidence suggests that routine chest radiography and computed tomography scanning are rarely indicated and may be harmful (16, 17). Unexpected findings on chest radiographs were noted in less than 6% of the 2,457 daily routine

radiographs that were ordered in 754 consecutive ICU patients in a mixed medical-surgical ICU (18). In fewer than half of these cases did the finding prompt a change in management (18). Relatively stable patients are particularly unlikely to benefit from routine chest radiography, a practice which accrues increased cost and radiation dose and more interventions (19–21). A protocol to reduce chest radiograph ordering decreased use by up to 36% (22).

Among all items considered by the task force, this recommendation was among the most highly ranked regarding the prevalence of the problem, the potential for aggregate cost savings, and the applicability of the issue to the practice of critical care. This recommendation scored more modestly on the criteria of the strength of evidence and the innovation of the recommendation.

### **Recommendation #2: Do Not Transfuse RBCs in Hemodynamically Stable, Nonbleeding ICU Patients with an Hb Concentration Greater Than 7 g/dl**

Many critically ill patients receive RBC transfusions during their ICU stay. The largest national study to date, conducted in 2001 in a mixed medical-surgical population, found that 44% of ICU patients received at least one transfusion, with an average of 4.6 units per patient (23). By contrast, a more recent study of medical ICU patients in Maryland found rates of approximately 18% in 2007 (24). Although RBC transfusion is indicated in severe anemia and hemorrhagic shock, the majority of transfusions appear to be given to patients with asymptomatic anemia. For example, in the national study, the average Hb concentration at transfusion was 8.6 g/dl, with 65% of patients receiving transfusions at Hb concentrations above 7.0 g/dl (23).

**Table 2.** Final Top 5 List Approved by Societies' Leadership and Included in Choosing Wisely Campaign**1. Do not order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.**

Many diagnostic studies (including chest radiographs, arterial blood gases, blood chemistries and counts, and ECGs) are ordered at regular intervals (e.g., daily). Compared with a practice of ordering tests only to help answer clinical questions, or when doing so will affect management, the routine ordering of tests increases health-care costs, does not benefit patients, and may in fact harm patients. Potential harms include anemia due to unnecessary phlebotomy, which may necessitate risky and costly transfusion, and the aggressive work-up of incidental and nonpathological results found on routine studies.

**2. Do not transfuse RBCs in hemodynamically stable, nonbleeding ICU patients with an Hb concentration greater than 7 mg/dl.**

Most red blood cell transfusions in the ICU are for benign anemia rather than acute bleeding that causes hemodynamic compromise. For all patient populations in which it has been studied, transfusing RBCs at a threshold of 7 mg/dl is associated with similar or improved survival, fewer complications, and reduced costs compared with higher transfusion triggers. More aggressive transfusion may also limit the availability of a scarce resource. It is possible that different thresholds may be appropriate in patients with acute coronary syndromes, although most observational studies suggest harms of aggressive transfusion even among such patients.

**3. Do not use parenteral nutrition in adequately nourished critically ill patients within the first 7 d of an ICU stay.**

For patients who are adequately nourished before ICU admission, parenteral nutrition initiated within the first 7 d of an ICU stay has been associated with harm, or at best no benefit, in terms of survival and length of stay in the ICU. Early parenteral nutrition is also associated with unnecessary costs. These findings are true even among patients who cannot tolerate enteral nutrition. Evidence is mixed regarding the effects of early parenteral nutrition on nosocomial infections. For patients who are severely malnourished directly before their ICU admission, there may be benefits to earlier parenteral nutrition.

**4. Do not deeply sedate mechanically ventilated patients without a specific indication and without daily attempts to lighten sedation.**

Many mechanically ventilated ICU patients are deeply sedated as a routine practice despite evidence that using less sedation reduces the duration of mechanical ventilation and ICU and hospital length of stay. Several protocol-based approaches can safely limit deep sedation, including the explicit titration of sedation to the lightest effective level, the preferential administration of analgesic medications before initiating anxiolytics, and the performance of daily interruptions of sedation in appropriately selected patients receiving continuous sedative infusions. Although combining these approaches may not improve outcomes compared to one approach alone, each has been shown to improve patient outcomes compared with approaches that provide deeper sedation for ventilated patients.

**5. Do not continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.**

Patients and their families often value the avoidance of prolonged dependence on life support. However, many of these patients receive aggressive life-sustaining therapies, in part due to clinicians' failures to elicit patients' values and goals and to provide patient-centered recommendations. Routinely engaging high-risk patients and their surrogate decision makers in discussions about the option of forgoing life-sustaining therapies may promote patients' and families' values, improve the quality of dying, and reduce family distress and bereavement. Even among patients pursuing life-sustaining therapy, initiating palliative care simultaneously with ongoing disease-focused therapy may be beneficial.

*Definition of abbreviations:* ICU = intensive care unit; RBC = red blood cell.

The Choosing Wisely Top 5 List in Critical Care Medicine originally appeared on the Choosing Wisely website (<http://www.choosingwisely.org/doctor-patient-lists/american-college-of-chest-physicians-and-american-thoracic-society/>).

These transfusion thresholds are not supported by current evidence. Several randomized clinical trials (RCTs) have found that using a transfusion trigger of an Hb concentration of less than 7 g/dl was associated with either equivalent or lower mortality compared with a transfusion trigger of less than 9 g/dl (25–27). Based on this evidence, a recent multisociety clinical practice guideline strongly recommends an Hb concentration transfusion threshold of less than 7 g/dl in hemodynamically stable patients without trauma or acute bleeding (28). Some question remains regarding appropriate transfusion thresholds for patients who are actively bleeding or with acute coronary syndromes. However, a recent RCT showed that even patients with upper gastrointestinal bleeding fare as well or better with restrictive transfusion thresholds (27). Additionally, a number of observational studies (29–31), a recent metaanalysis (32), and a small RCT (33) all

suggest that restrictive transfusion strategies are superior for anemic patients with acute coronary syndromes including myocardial infarction. Given the preponderance of evidence that lower transfusion thresholds are uniformly safe, and the absence of evidence suggesting benefit to a transfusion threshold greater than 7 g/dl in any particular patient population (34, 35), intensivists might reasonably use this threshold in all critically ill patients.

Task force members rated this item extremely highly on the strength of the evidence. Members also rated it highly on its centrality to the practice of critical care medicine. The item was rated less highly on prevalence and innovation, given the perception of many task force members that RBC transfusion use may already be in decline. However, a study published after the task force voted found that despite publication of the landmark RCTs,

transfusion practices have not declined appreciably (24). Such evidence would only have enhanced the task force's rating of this item.

**Recommendation #3: Do Not Use Parenteral Nutrition in Adequately Nourished Critically Ill Patients within the First 7 Days of an ICU Stay**

Enteral nutrition is the optimal method for delivering nutritional support during critical illness (36–39). For patients who are adequately nourished before ICU admission, early parenteral nutrition—that is, parenteral nutrition initiated within the first 7 days of an ICU stay—is associated with equal or worse survival and length of stay in the ICU compared with no nutrition (36, 37, 40–42). Early parenteral nutrition also worsens adiposity in normally muscle-laden areas (43) and carries unnecessary costs (36, 38, 40, 44).



Recent evidence is mixed regarding the effects of early parenteral nutrition on poorly validated surrogate endpoints such as nosocomial infections and the duration of mechanical ventilation (40–42). Thus, although the optimal timing of parenteral nutrition is likely to be further informed as new data emerge, there appears to be no rationale for administering early parenteral nutrition for patients who are adequately nourished shortly before their ICU admission (45). For patients with preexisting protein-calorie malnutrition, it is possible that earlier parenteral nutrition may be helpful if the delivery of enteral nutrition is insufficient to meet nutritional needs (36, 39, 46). Despite this evidence base, recent data suggest that parenteral nutrition is commonly used early in critical illness (47).

Among the recommendations considered, this item scored highly with respect to its prevalence in both academic and community ICUs and in terms of expected cost savings and innovation. The recommendation scored less well with respect to the strength of evidence and its specificity to the practice of critical care medicine.

#### **Recommendation #4: Do Not Deeply Sedate Mechanically Ventilated Patients without a Specific Indication and without Daily Attempts to Lighten Sedation**

Ensuring patient safety and comfort during critical illness is an important goal for critical care clinicians. However, accumulating evidence suggests substantial risk from excessively deep or unnecessarily prolonged sedation. Various structured approaches that share the common goal of minimizing sedation have been linked to shorter duration of mechanical ventilation, shorter ICU and hospital length of stay, fewer tracheostomies, fewer tests to investigate altered mental status, and reduced delirium (48, 49).

Basic tenets of sedation and analgesia management applied in many protocols include establishing a specific indication for sedation, setting a target level of consciousness, monitoring sedation and pain using validated scales, and titrating medications to achieve therapeutic goals while maintaining the lightest effective level of sedation (48–62). Because administration of sedative medications by continuous intravenous infusion has been linked to

unnecessarily deep sedation and delayed recovery, some approaches emphasize intermittent dosing (50, 63). Other effective approaches target the treatment of pain before giving sedative agents or a structured evaluation and management of both pain and agitation (64–66). For patients who are more deeply sedated, scheduling daily interruptions of sedative and analgesic infusions until patients are alert may also facilitate earlier extubation (61, 67, 68). Although head-to-head, randomized comparisons of various techniques have not demonstrated the superiority of any specific approach, approaches that minimize sedation are consistently found to be superior to approaches yielding deeper sedation.

Of the items considered by the task force, the recommendation to minimize sedation was considered to be highly germane to the practice of critical care medicine. Additionally, this recommendation scored highly regarding the strength of evidence and potential cost savings, with the latter attributable primarily to decreased lengths of stay. Among the final items considered, this recommendation received average ratings for its prevalence and innovation.

#### **Recommendation #5: Do Not Continue Life Support for Patients at High Risk for Death or Severely Impaired Functional Recovery without Offering Patients and Their Families the Alternative of Care Focused Entirely on Comfort**

Patients and their families often value the avoidance of prolonged dependence on life support (69, 70). However, many seriously ill patients receive aggressive life-sustaining therapies (71–73), which has been associated with reduced quality (74, 75) and perhaps quantity (76–78) of life near its end. Prolonged aggressive care in the ICU is also associated with long-lasting pathological bereavement among family members (75, 79–81), contravening most patients' strong desires not to burden their loved ones (82–84).

Much of this aggressive care may be attributable to variability among ICU clinicians in their practices of eliciting patients' values and goals and in their provision of recommendations (85–87). Clinician variability, in turn, may contribute to the marked geographic variation across the United States in the

costs of care in the last year of life, without corresponding differences in patients' preferences for the aggressiveness of care (88, 89). Routinely engaging patients at high risk of death and their surrogate decision makers in discussions about the option of forgoing life-sustaining therapies may promote patients' and families' values, improve the quality of dying, and reduce family distress and bereavement (90–94). Even among patients pursuing life-sustaining therapy, initiating palliative care simultaneously with ongoing disease-focused therapy may be beneficial, although the evidence for this is strongest in the outpatient setting (76, 77).

Among all items considered by the task force, this item was the highest rated regarding its centrality to the practice of critical care medicine. This item also scored highly in terms of the prevalence with which this issue arises. Criteria on which it scored less well included the strength of the evidence supporting the recommendation, which is mostly observational in nature, and the anticipated cost savings, which may be modest (95, 96).

## **Discussion**

When this Top 5 list of common ICU practices to be questioned was published by the Choosing Wisely Campaign in January 2014, it joined more than 50 similar lists developed by other professional societies. In addition to signifying the Critical Care Societies Collaborative's commitment to this national campaign, there are several unique strengths of our process.

First, this Top 5 list emanated from a collaborative effort by four unique professional societies. The shared consensus among multiple societies that these recommendations are appropriate supports the credibility of the product. Second, this is the only list to have involved a professional nursing society in its development, reflecting the intrinsically interprofessional nature of critical care. Third, we began by establishing explicit criteria on which we would evaluate the items, lending transparency and consistency to a year-long process. Finally, we used an evaluative process long promoted by study sections at the National Institutes of Health and elsewhere in which we encouraged task force members to weight the individual criteria as they deemed most appropriate in arriving at their final scores.

Despite these strengths, our work is only a first step in what we hope will be a much broader effort to improve the quality, efficiency, and overall value of critical care delivery. The costs of critical care, like most inpatient services, are relatively fixed in the short term (97) and are primarily driven by the large numbers of operational ICU beds in the United States (98) and the clinicians employed to staff these beds. Thus, although adherence to our recommendations would improve patient outcomes and cut costs, dramatic reductions in the costs of critical care may require strategic contractions of the supply of ICU beds or prominent changes in their use. Although recent studies suggest that such contractions might be undertaken without harming patients (99–102), the task force considered this evidence base too nascent to yield specific recommendations regarding the supply and use of ICU beds.

A second limitation is that Choosing Wisely lists are restricted to five items, a deliberate decision intended to make the lists actionable and to focus on recommendations for which the greatest consensus exists (9). Yet, as a consequence, we necessarily excluded other recommendations that might improve the value of critical care delivery. Among the items that just missed inclusion in the Top 5 list were several related to antimicrobial use, computed tomography, and routine arterial and central venous catheterization. The task force scored each of these items less strongly, typically due to one or two core limitations. For example, task force members agreed that several forms of computed tomography were overused in critical care medicine but discounted scores for these items because they were not believed

to be unique matters for our profession. Such recommendations were also considered less innovative because numerous other professional societies have recommended reducing computed tomography and other imaging modalities as part of the Choosing Wisely Campaign (103).

Thus, although this list is by no means exhaustive, we believe it provides five key ways for intensivist clinicians to begin improving the quality and reining in the costs of their care. Furthermore, by formalizing specific approaches for clinicians to more earnestly adhere to their duties to use resources judiciously, the list may have spillover effects such that critical care clinicians more routinely consider costs and effectiveness in their daily decision making.

A third limitation, which pertains to the Choosing Wisely Campaign more generally, is that in many cases, the factors driving use of low-value services are unknown. Much but not all overuse is attributable to individual decisions made by clinicians and patients. To the extent that service provision is driven by factors outside the control of individual clinicians and patients, interventions other than Choosing Wisely recommendations will be needed. For example, systems-level interventions, such as changes in physician and nurse staffing patterns, may yield substantial improvements in the value of health-care delivery. By contrast, we focused our recommendations on tests or therapies that are largely under clinicians' control, as these are the care processes most likely to be impacted by published lists in publications targeting clinicians.

With the publication of this list, the Critical Care Societies Collaborative must begin the hard work of promoting adherence to these recommendations.

Indeed, our five recommendations all reflect best practices, so clearly a key problem is that of adherence. Several options are available that go beyond traditional dissemination by passive education. For example, there is considerable interest in reforming provider reimbursement structures such that disincentives exist for ordering unnecessary tests or performing unnecessary procedures. Reducing service use through financial disincentives holds considerable promise due to physicians' natural loss aversion, such that, everything else being equal, a reimbursement reduction for ordering an unnecessary test is likely to be more effective than a reimbursement increase for ordering an indicated test (104). However, changing reimbursement structures are unlikely to succeed unless physicians are simultaneously made aware of exactly which low-value tests and procedures to avoid (105). Thus, disseminating the Top 5 lists of the Choosing Wisely Campaign may usefully guide physician reimbursement reforms.

More directly, these five recommendations provide a starting point for physicians, nurses, allied health professionals, patients, and patients' families to make decisions leading to higher-quality, lower-cost critical care. Future work is needed to develop additional ways for clinicians to take leadership in reining in health-care costs and to promote adherence to such recommendations. In the meantime, reducing the low-value care identified in these recommendations is an important first step, enabling our field to help stabilize health-care costs and thereby promote the availability of health care for all patients. ■

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This statement was prepared by the Choosing Wisely Taskforce

#### Members of the Taskforce:

SCOTT D. HALPERN, M.D., Ph.D. (*Chair*)  
 DEBORAH BECKER, Ph.D., R.N.  
 J. RANDALL CURTIS, M.D., M.P.H.  
 ROBERT FOWLER, M.D.  
 ROBERT HYZY, M.D.  
 LEWIS J. KAPLAN, M.D.  
 NISHI RAWAT, M.D.  
 CURTIS N. SESSLER, M.D.  
 HANNAH WUNSCH, M.D., M.Sc.  
 JEREMY M. KAHN, M.D., MSc.

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