Value and Cancer Care: Toward an Equitable Future

Lowell E. Schnipper¹, Neal J. Meropol², and Dan W. Brock³

Abstract

Health care expenses in the United States are increasing inexorably. At the current rate of growth, it is anticipated that 20% of the gross national product will consist of health-related expenditures within the next decade. Cancer is the second leading cause of death in the United States, and it is increasing in prevalence because of the aging of the population and the limited number of successful prevention strategies. As the biological characteristics of cancer come into sharper focus, targeted therapies are being developed that offer the promise of increased clinical benefit with fewer toxicities than are associated with conventional treatment. Although spectacular successes are infrequent with this approach, to date, the majority of targeted therapies are modestly effective at best, and extremely costly. This observation suggests that a broadly acceptable definition of value in a cancer therapeutic agent is not at hand, but is sorely needed from the vantage points of the patient and society. A corollary issue of enormous import is how to equitably distribute the health care dollar in the service of achieving the greatest good for the greatest number. Although cancer is responsible for only 5% of the health care budget, its cost is increasing and it can be viewed as paradigmatic when contemplating the problem of equity in health care. Here, a number of concepts are discussed that focus on this goal and its implications for the cancer patient and society at large.

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therapies is the National Institute for Health and Clinical Effectiveness (NICE) of the United Kingdom. Mason and colleagues compared approval rates for the U.S. Food and Drug Administration (FDA) and NICE for the period 2004 to 2008, when 59 new agents were approved for use in the United States, and only 46 of these were granted the same status in the United Kingdom (3). Despite the fact that the two systems are entirely different, the basis for the difference almost certainly relates to the fact that NICE concluded that a number of these agents did not bring sufficient value to the patient to justify their use when compared with the importance of the programs and/or practices that would have to be dropped. The latter decision is often arrived at by a straightforward calculation that determines the incremental cost-effectiveness ratio (ICER). In the United Kingdom, the threshold is £30,000 or $50,000 per quality-adjusted life year (QALY). (NICE has recently relaxed this cap for rare cancers that will not have a large budget impact.) Notably, many of the treatments commonly used (and paid for) in the United States far exceed this “limit” (4).

To emphasize the different tolerance for cost-effectiveness ratios, the FDA has approved the use of erlotinib with gemcitabine in metastatic pancreatic cancer despite the short prolongation in survival of 0.33 months, at a cost per QALY of $510,000 (5). Although this type of consideration (ICER) is not explicitly entertained in the United States, it is often assumed that (in the United States) a threshold of $100,000 per QALY should be accepted as a cost-effective intervention (6). Although by no means uniformly systematized, a number of insurance companies in the private sector and in government (the Veterans Affairs Health System) are using Health Technology Assessments. Whether this use is a wave of the future in the United States remains to be seen.

### Why do new cancer drugs often fail to meet typical cost-effectiveness standards?

One reason why new cancer drugs often fail to meet typical cost-effectiveness standards is the intellectual property system that provides patent protection for new drugs (Table 1). This system gives the drug company holding the patent exclusive rights to market the drug for 20 years, although, in practice, the period is usually much shorter. Second, these drugs are often very expensive to develop (their cost is not part of the decision to approve or not at the level of the FDA by statute), although often not expensive to produce once developed. They are often used in a limited patient population, especially when they are used by end-stage cancer patients, and so there is not the high volume needed to recoup development and manufacturing costs. Third, Medicare, which is the biggest purchaser of cancer drugs in this country, is not permitted to refuse coverage of a drug on grounds either of cost, or cost-effectiveness. The Medicare standard for coverage is whether the drug is “reasonable and necessary” for the diagnosis or treatment of disease or injury (7). Fourth, Medicare was explicitly prohibited from negotiating drug prices under the new prescription drug benefit passed during the Bush Administration. Fifth, because many private insurance companies look to Medicare in their decisions about coverage of new drugs, they too give little weight to costs and cost-effectiveness. Sixth, most cancer patients have health insurance that covers most of their treatment costs. As a result, they need only be concerned with their out-of-pocket costs, not the full costs of their care. Finally, this cost coverage inadvertently reinforces decisions by oncologists to prescribe cost-ineffective therapies on the slim chance that they might help (8, 9). Medicine’s professional norm is first and foremost to do what will be best for one’s patients, without regard to costs. Many physicians are justifiably concerned that this norm will be eroded in the face of the ever increasing growth of health care costs and society’s determination to contain these (10). Not to be ignored in this discussion is the fact that the revenue stream that has sustained the ability of many practices to provide high levels of care derives from providing cancer drugs to their patients (11). It is notable that the American Society of Clinical Oncology recently published a guidance statement encouraging oncologists to consider the impact of cost on their individual patients when discussing treatment recommendations (12).

### The burden on the individual

The burden on the individual for costly technologies and therapies can be significant. As J.L. Malin points out in a recent editorial in the Journal of Clinical Oncology (4), “although increases in the number of beneficiaries account for some of the increase in the cost of the Medicare program, new technology is estimated to account for up to 48% of the change in spending since 1960” (3, 13, 14). Patients’ share of costs is increasing, both for Medicare enrollees as well as those who are privately insured, though there is tremendous variation across plans. In a recent study, Goldman and coworkers reported that although median patient out-of-pocket costs for new oncologic biologic therapies was only 1% to 2% of the total cost, the mean was 4% to 13% at the 90th percentile, and patient share of total cost ranged from 13% for imatinib to 51% for rituximab (15).

The expense associated with many contemporary therapies is substantial and often unaffordable even for those who are employed and have health insurance. The

### Table 1. Factors Contributing to the High Cost of Cancer Treatments

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
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<tr>
<td>Intellectual property patent protection on new agents</td>
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<tr>
<td>High cost of drug development and manufacture</td>
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<td>Use of agents having small benefit but high cost</td>
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<tr>
<td>Physician commitment to his or her patient</td>
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<tr>
<td>Neither patient nor physician incentivized to limit cost</td>
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<tr>
<td>Medicare cannot make judgments about value of new therapies</td>
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<tr>
<td>Medicare cannot negotiate drug prices</td>
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economic recession that began in 2008 has resulted in a large number of Americans being unemployed; not infrequently, this results in loss of health insurance. The large number of uninsured, and the underinsured (those whose insurance contains various limits that result in it not covering the costs of a serious illness), are extremely vulnerable to the costs of contemporary cancer treatment. This conundrum is leading many patients to forgo or diminish the use of these therapies at significant danger to their lives and well-being (16, 17). Among those declaring bankruptcy for medical reasons, cancer is frequently the illness that precipitates the financial crisis (18).

**The burden on the physician-patient interaction**

In a provocative study, Neumann and colleagues developed a questionnaire to assess oncologists’ attitudes toward various aspects of cancer costs, the cost-effectiveness of treatments, and oncologists’ views about potential policies related to cost sharing and to the use of comparative effectiveness and cost-effectiveness information (19). The study can be criticized for uncertainty about whether the respondents were typical of all oncologists. Nonetheless, oncologists who were surveyed were generally sensitive to the out-of-pocket costs of cancer therapies, and expressed the view that in the near future cost will be a factor in which medications they prescribe. When queried about the financial definition of a therapy that represents “good value,” half indicated it as $50,000 to $100,000 per QALY gained, and only 11% felt that more than $150,000 was reasonable. Many expressed the belief that more government intervention is justified in cancer care, particularly as it relates to governing pricing of therapeutics. Although acknowledging cost as an important variable that is likely to affect their management recommendations, it is unusual for oncologists to have in depth discussions with patients about cost. Furthermore, it is obvious that our society in general, and practicing oncologists in particular, seem comfortable with exceeding their stated “value limits” when treating patients with high-priced therapies (20).

Patients seem to be sensitive to the cost of cancer treatments as well. Wong and colleagues surveyed cancer patients to test the hypothesis that patients would be willing to pay more for effective treatments in curative and palliative settings. The degree of acceptance of out-of-pocket payments was correlated with several variables, including the efficacy of a proposed treatment, the employment status of an individual, and in the case of metastatic disease, the extent to which earlier cancer treatments caused a financial sacrifice. Overall, patients seemed able to distinguish levels of value in hypothetical scenarios (20).

The current system of cancer care in the United States is unpredictable with respect to the financial burden that will be placed on any single individual or family. Based upon the enormous increase in projected health care spending over the next several decades, cancer care, as with all other types of health care, is likely to confront downward pressures on its cost.

**The problem: distributing cancer care**

A reasonable question is how, in the face of a large number of cancer therapies that are very costly and provide only modest or little clinical respite from the disease, to distribute these in the most equitable manner.

Two decades ago, the oncologic community viewed a successful outcome as cure, and the academic community was working to identify therapies for solid tumors as effective as those for lymphoma, testicular cancer, or childhood leukemia. Over the ensuing decades, the value of a more incremental approach to cancer therapy became apparent. A decrease in the recurrence of breast cancer in a small fraction of patients led to the treatment of millions of women with adjuvant chemotherapy, despite the fact that a majority either did not need it or would not benefit. This treatment has been justified because the beneficiaries may never have a recurrence of their disease. In advanced cancer, the vision proposed is that it is an incurable chronic disease that can sometimes be managed. The availability of multiple lines of therapy for a single tumor type, such as breast cancer, resulted. The net effect has been to employ therapies that have very modest benefit at very high cost. This issue of *CCR Focus* examines a number of questions surrounding marginal outcomes in cancer and juxtaposes those against the cost to our health care system.

If the concern is with value as stated above, then in principle we might compare all alternative resource uses for their relative cost-effectiveness and use available funds to maximize health benefits for the population (21). Of course, we lack the data for such an ambitious comprehensive comparison. One alternative simplification is to adopt a limit on the cost and/or QALY beyond which interventions will not be funded in the health care system. As mentioned above, this is essentially what NICE has done in Great Britain (22).

Value, as it has been discussed above, is only one of the two broad goals or standards for health care resource allocation; the other is equity across the population served by the health care system.

**Principles of Equity**

The preceding discussion has focused on the causes of many cancer drugs failing to meet a standard of good value, and the impact of that failure on society and individuals. (Of course, much the same could have been said about many other areas of medicine.) The discussion has been empirical, what are the causes and impact, not normative or ethical. But value is only one of the two broad ethical goals or standards for health care resource allocation; the other is equity across the population served by the health care system. Achieving equity can sometimes conflict with value or maximizing overall health benefits, and so justifies health expenditures that may not be cost-effective or good value. We next examine whether several common principles of equity might justify expenditures on non–cost-effective cancer drugs, and conclude that they do not.
Priority to the worse off

Many different accounts of equity and justice, as well as many religious traditions, give at least some priority to the worse off (23). Would giving priority in health resource allocation to the worse off justify the high costs of cancer drugs; for example, costs beyond a value cap such as $100,000 for an average of 3 months life extension? This question depends, in part, on whether these patients are the worse off for purposes of this resource allocation. Typical cancer patients treated by last chance therapies are worst off in terms of the urgency of their condition and need. Without this treatment, and in many cases even with it, their death will come very soon. But this description is not the relevant sense of worse off. The worse off are those who are worse off in the good that we are distributing. Although that is, of course, a cancer treatment, the goal of that treatment is additional months or years of life for the patient; (for simplicity, we set aside here quality of life benefits). So the worst off are, then, those who will have had the fewest years of life if they are not treated. But this is not the typical cancer patient treated with these expensive new drugs.

For simplicity, suppose that the average age of these last chance cancer patients is 70; then, without this very expensive treatment, they will die at 70, only slightly less than the average lifespan in American society today. They are not the worst off in terms of the years of life they will have had either with or without treatment. Instead, the worst off are much younger patients who also have a life-threatening illness; without treatment, they will die after many fewer years of life than the 70-year-old cancer patient (24).

It is certainly true that the more urgent patient may exert greater psychological pull on others, but being more urgent does not provide a separate moral reason for priority.

The result of abandoning reasonable value standards in the face of urgency would be the use of much very high-cost, marginal-benefit care for dying patients. This situation is arguably our current practice in much care, including cancer care, of dying patients. But it is neither a rational nor ethical use of limited resources. The money spent on this very expensive, but marginal benefit, end-of-life care, could produce greater benefits if spent elsewhere either within or outside the health care system; in the economist’s terminology, the opportunity costs of securing that treatment are much too great. A single patient, knowing he or she is near death with only one possible treatment remaining that might delay this outcome for even a short period, might spend everything they have on the treatment. But this is not the proper perspective for deciding what treatments will be covered by insurance.

Aggregation and special priority to life extension

The aggregation problem in health resource allocation is whether small benefits to many persons should have priority over large benefits to a few, so long as the aggregate benefits to the many are greater than those to the few. Many people support giving priority to big benefits to a few, especially if they are life saving, even if in the aggregate they are less than the small benefits to many. Might this be considered a justification of the special priority given to high-cost, marginal-benefit cancer drugs?

The aggregation problem raises the question of whether special priority should be given to treatment of end-stage cancer patients, even if their care is not cost-effective in comparison with treatments providing small benefits to a larger number of patients. The authors contend that the answer is no. A life-saving treatment like an appendectomy generally produces a very large benefit; it prevents the patient’s death and returns him or her to a healthy life. But a cancer treatment that postpones death on average for 3 months at a cost of $100,000 does not produce such a large benefit. The life extension is short, and the quality of life during it is often poor. It is not a large enough benefit to trump the greater benefits to many that would have to be foregone to provide it.

Rule of rescue

Albert Jonsen proposed some years ago what he called the rule of rescue as a psychological fact about people: Most people are unwilling to let an identified individual in peril suffer great harm or the loss of her life if they could prevent that harm or loss, even if doing so would be at very great cost (25). This “rule” refers in part to the issue of urgency discussed above. It explains why, for example, if a mine collapse that leaves identified miners trapped in the mine, an all out rescue effort is undertaken without regard to its cost, even if more deaths could have been prevented by earlier safety measures that were rejected because of their costs. The rule of rescue was proposed by Jonsen as a fact about human psychology, not a normative principle that we ought to follow. But it is doubtful that it even applies to last chance cancer therapies. Very expensive, marginal benefit last chance cancer drugs do not commonly “rescue” a dying patient. Instead, on average they may delay death for only a very short time, for example 3 months. Although some patients may live for more than 3 months, others will not necessarily live even that long. The drug only slows the progression of the patient’s cancer by a few months; it does not “cure” the cancer. The psychological force of the rule of rescue should be much weaker in the context of this cancer care than in mine collapses. It should not make it impossible to resist providing the treatment, and certainly does not justify doing so. This problem may be a particularly American one; other cultures do not seem to view the postponement of death by a few months as holding an equivalent importance. Culturally, are we entirely honest in our assessment of what a few months, particularly spent in illness, can accomplish?

In what direction should we go?

The challenge to us is how to develop a reasonable social consensus on if and when very high-cost, marginal-benefit interventions and treatments should be avoided. This consensus will not be achieved quickly or easily because these are not no-benefit treatments. Many of the articles in this issue of CCR Focus explore aspects of this problem in great depth (26–30). Even after health reform, our very heterogeneous and fragmented system will make it difficult to
expansion of the use of clinical trials in treatments directed at the last phase of life, authorization of the Centers for Medicare and Medicaid Services (CMS) to negotiate prices under Medicare with the pharmaceutical companies, reduction of incentives to develop and market interventions of only modest benefit to patients, and pursuit of rigorous studies of comparative effectiveness for which there is increasing governmental support. Although not resolving the problem of rapidly increasing cancer care costs, these steps would make the health care system, not just the cancer care system, more rational and just.

Disclosure of Potential Conflicts of Interest

N. Meropol, consultant, AstraZeneca, Genentech, Genomic Health, Amgen, Sanofi Aventis, Pfizer, Saladaix; research support, Saladaix. L. Schnipper, member advisory board, ITA Partners; co-Editor-in-Chief, UpToDate. D. Brock declared no potential conflicts of interest.

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Table 2. Possible Solutions to Consider

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<td>More rigorous analysis of the data in clinical trials: when is an advance a real advance?</td>
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<tr>
<td>Do not approve drugs with marginal benefits</td>
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<tr>
<td>Expanded use of clinical trials in end-of-life care</td>
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<tr>
<td>Authorize CMS to negotiate prices under Medicare with the pharmaceutical companies</td>
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<tr>
<td>Reduce incentives to develop new drugs that add little benefit to therapies already in use</td>
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<tr>
<td>Expand rigorous studies of comparative effectiveness</td>
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Implement such limitations fairly and equitably. Unless this situation changes, more modest steps must be taken that could help move us in the right direction (Table 2). Approaches include rejection of ever smaller incremental benefits, more honest appraisals of clinical trial outcomes,
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