What Is Value in Health Care?
Michael E. Porter, Ph.D.

In any field, improving performance and accountability depends on having a shared goal that unites the interests and activities of all stakeholders. In health care, however, stakeholders have myriad, often conflicting goals, including access to services, profitability, high quality, cost containment, safety, convenience, patient-centeredness, and satisfaction. Lack of clarity about goals has led to divergent approaches, gaming of the system, and slow progress in performance improvement.

Achieving high value for patients must become the overarching goal of health care delivery, with value defined as the health outcomes achieved per dollar spent. This goal is what matters for patients and unites the interests of all actors in the system. If value improves, patients, payers, providers, and suppliers can all benefit while the economic sustainability of the health care system increases.

Value — neither an abstract ideal nor a code word for cost reduction — should define the framework for performance improvement in health care. Rigorous, disciplined measurement and improvement of value is the best way to drive system progress. Yet value in health care remains largely unmeasured and misunderstood.

Value should always be defined around the customer, and in a well-functioning health care system, the creation of value for patients should determine the rewards for all other actors in the system. Since value depends on results, not inputs, value in health care is measured by the outcomes achieved, not the volume of services delivered, and shifting focus from volume to value is a central challenge. Nor is value measured by the process of care used; process measurement and improvement are important tactics but are no substitutes for measuring outcomes and costs.

Since value is defined as outcomes relative to costs, it encompasses efficiency. Cost reduction without regard to the outcomes achieved is dangerous and self-defeating, leading to false “savings” and potentially limiting effective care.

Outcomes, the numerator of the value equation, are inherently condition-specific and multidimensional. For any medical condition, no single outcome captures the results of care. Cost, the equation’s denominator, refers to the total costs of the full cycle of care for the patient’s medical condition, not the cost of individual services. To reduce cost, the best approach is often to spend more on some services to reduce the need for others.
Health care delivery involves numerous organizational units, ranging from hospitals to physicians’ practices to units providing single services, but none of these reflect the boundaries within which value is truly created. The proper unit for measuring value should encompass all services or activities that jointly determine success in meeting a set of patient needs. These needs are determined by the patient’s medical condition, defined as an interrelated set of medical circumstances that are best addressed in an integrated way. The definition of a medical condition includes the most common associated conditions — meaning that care for diabetes, for example, must integrate care for conditions such as hypertension, renal disease, retinal disease, and vascular disease and that value should be measured for everything included in that care.

For primary and preventive care, value should be measured for defined patient groups with similar needs. Patient populations requiring different bundles of primary and preventive care services might include, for example, healthy children, healthy adults, patients with a single chronic disease, frail elderly people, and patients with multiple chronic conditions.

Care for a medical condition (or a patient population) usually involves multiple specialties and numerous interventions. Value for the patient is created by providers’ combined efforts over the full cycle of care. The benefits of any one intervention for ultimate outcomes will depend on the effectiveness of other interventions throughout the care cycle.

Accountability for value should be shared among the providers involved. Thus, rather than “focused factories” concentrating on narrow groups of interventions, we need integrated practice units that are accountable for the total care for a medical condition and its complications.

Because care activities are interdependent, value for patients is often revealed only over time and is manifested in longer-term outcomes such as sustainable recovery, need for ongoing interventions, or occurrences of treatment-induced illnesses. The only way to accurately measure value, then, is to track patient outcomes and costs longitudinally.

For patients with multiple medical conditions, value should be measured for each condition, with the presence of the other conditions used for risk adjustment. This approach allows for relevant comparisons among patients’ results, including comparisons of providers’ ability to care for patients with complex conditions.

The current organizational structure and information systems of health care delivery make it challenging to measure (and deliver) value. Thus, most providers fail to do so. Providers tend to measure only what they directly control in a particular intervention and what is easily measured, rather than what matters for outcomes. For example, current measures cover a single department (too narrow to be relevant to patients) or outcomes for a whole hospital, such as infection rates (too broad to be relevant to patients). Or they measure what is billed, even though current reimbursement practices are misaligned with value. Similarly, costs are measured for departments or billing units rather than for the full care cycle over which value is determined. Faulty organizational structure also helps explain why physicians fail to accept joint responsibility for outcomes, blaming lack of control over “outside” actors involved in care (even those in the same hospital) and patients’ compliance.

The concept of quality has itself become a source of confusion. In practice, quality usually means adherence to evidence-based guidelines, and quality measurement focuses overwhelmingly on care processes. For example, of the 78 Healthcare Effectiveness Data and Information Set (HEDIS) measures for 2010, the most widely used quality-measurement system, all but 5 are clearly process measures, and none are true outcomes. Process measurement, though a useful internal strategy for health care institutions, is not a substitute for measuring outcomes. In any complex system, attempting to control behavior without measuring results will limit progress to incremental improvement. There is no substitute for measuring actual outcomes, whose principal purpose is not comparing providers but enabling innovations in care. Without such a feedback loop, providers lack the requisite information for learning and improving. (Further details about measuring value are contained in a framework paper, “Value in Health Care,” in Supplementary Appendix 1, available with the full text of this article at NEJM.org.)

Measuring, reporting, and comparing outcomes are perhaps the most important steps toward rapidly improving outcomes and making good choices about reducing costs. Systematic, rigorous outcome measurement remains rare, but a growing number of examples of comprehensive outcome measurement provide evidence of its feasibility and impact.
Determining the group of relevant outcomes to measure for any medical condition (or patient population in the context of primary care) should follow several principles. Outcomes should include the health circumstances most relevant to patients. They should cover both near-term and longer-term health, addressing a period long enough to encompass the ultimate results of care. And outcome measurement should include sufficient measurement of risk factors or initial conditions to allow for risk adjustment.

For any condition or population, multiple outcomes collectively define success. The complexity of medicine means that competing outcomes (e.g., near-term safety versus long-term functionality) must often be weighed against each other.

The outcomes for any medical condition can be arrayed in a three-tiered hierarchy (see Figure 1), in which the top tier is generally the most important and lower-tier outcomes involve a progression of results contingent on success at the higher tiers. Each tier of the framework contains two levels, each involving one or more distinct outcome dimensions. For each dimension, success is measured with the use of one or more specific metrics.

Tier 1 is the health status that is achieved or, for patients with some degenerative conditions, retained. The first level, survival, is of overriding importance to most patients and can be measured over various periods appropriate to the medical condition; for cancer, 1-year and 5-year survival are common metrics. Maximizing the duration of survival may not be the most important outcome, however, especially for older patients who may weight other outcomes more heavily. The second level in Tier 1 is the degree of health or recovery achieved or retained at the peak or steady state, which normally includes dimensions such as freedom from disease and relevant aspects of functional status.

Tier 2 outcomes are related to the recovery process. The first level is the time required to achieve recovery and return to normal or best attainable function, which can be divided into the time needed to complete various phases of care. Cycle time is a critical outcome for patients — not a secondary process measure, as some believe. Delays in diagnosis or formulation of treatment plans can cause unnecessary anxiety. Reducing the cycle time (e.g., time to reperfusion after myocardial infarction) can improve functionality and reduce complications. The second level in Tier 2 is the disutility of the care or treatment process in terms of discomfort, retreatment, short-term complications, and errors and their consequences.

Tier 3 is the sustainability of health. The first level is recurrences and the nature of recurrences, which are often related to care-induced illnesses. The second level in Tier 3 is the long-term consequences of therapy, such as care-induced illnesses.
rences of the original disease or longer-term complications. The second level captures new health problems created as a consequence of treatment. When recurrences or new illnesses occur, all outcomes must be remeasured.

With some conditions, such as metastatic cancers, providers may have a limited effect on survival or other Tier 1 outcomes, but they can differentiate themselves in Tiers 2 and 3 by making care more timely, reducing discomfort, and minimizing recurrence.

Each medical condition (or population of primary care patients) will have its own outcome measures. Measurement efforts should begin with at least one outcome dimension at each tier, and ideally one at each level. As experience and available data infrastructure grow, the number of dimensions (and measures) can be expanded.

Improving one outcome dimension can benefit others. For example, more timely treatment can improve recovery. However, measurement can also make explicit the tradeoffs among outcome dimensions. For example, achieving more complete recovery may require more arduous treatment or confer a higher risk of complications. Mapping these tradeoffs, and seeking ways to reduce them, is an essen-

<table>
<thead>
<tr>
<th>Primary/Unicompartmental Knee Osteoarthritis Requiring Replacement</th>
<th>Dimensions</th>
<th>Breast Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality rate (inpatient)</td>
<td>Survival</td>
<td>Survival rate (1-yr, 3-yr, 5-yr, longer)</td>
</tr>
<tr>
<td>Functional level achieved</td>
<td>Degree of health or recovery</td>
<td>Remission, Functional status, Breast preservation, Breast-conservation-surgery outcomes</td>
</tr>
<tr>
<td>Pain level achieved</td>
<td>Time to recovery and time to return to normal activities</td>
<td>Time to remission, Time to achievement of functional and cosmetic status</td>
</tr>
<tr>
<td>Extent of return to physical activities</td>
<td>Time to treatment, Time to return to physical activities, Time to return to work</td>
<td>Nosocomial infection, Nausea or vomiting, Febrile neutropenia, Limitation of motion, Breast reconstruction discomfort or complications, Depression</td>
</tr>
<tr>
<td>Ability to return to work</td>
<td>Pain, Length of hospital stay, Infection, Pulmonary embolism, Deep-vein thrombosis, Myocardial infarction, Immediate revision, Delirium</td>
<td>Cancer recurrence, Consequences of recurrence, Sustainability of functional status</td>
</tr>
<tr>
<td>Lost of mobility due to inadequate rehabilitation, Risk of complex fracture, Susceptibility to infection, Stiff knee due to unrecognized complication, Regional pain syndrome</td>
<td>Sustainability of health or recovery and nature of recurrences</td>
<td>Incidence of second primary cancers, Brachial plexopathy, Premature osteoporosis</td>
</tr>
<tr>
<td>Long-term consequences of therapy (e.g., care-induced illnesses)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Outcome Hierarchies for Breast Cancer and Knee Osteoarthritis.
Putting the Value Framework to Work

Thomas H. Lee, M.D.

“V

alue” is a word that has long aroused skepticism among physicians, who suspect it of being code for “cost reduction.” Nevertheless, an incrementing number of health care delivery organizations, including my own, now describe enhancement of value for patients as a fundamental goal and are using concepts developed by Michael Porter (see pages 2477–2480, and the framework papers in Supplementary Appendix 1 and 2 of that article) to shape their strategies. For instance, an increasing number of physicians, who suspect value for patients as a fundamental goal and are using concepts developed by Michael Porter (see pages 2477–2480, and the framework papers in Supplementary Appendix 1 and 2 of that article) to shape their strategies.