
EXECUTIVE SUMMARY

Targeting Cancer:

Innovation in the Treatment of Chronic Myelogenous Leukemia



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Executive Summary

From drugs and medical devices, to information technology and care delivery, advances across the health care system have led to significant improvements in the quality and length of patients' lives. In recent years however, the relentless rise of health care costs has shifted our national attention toward the cost of innovation. Ultimately, the most successful path to improving the efficiency of our health care system lies in defining the value of innovative treatments and care processes, rather than measuring costs or benefits alone. We must work to find ways to identify valuable innovations and the mechanisms for getting them to patients as quickly as possible. We need to speed the adoption of cost-effective innovations to improve patient quality of life without increasing the aggregate costs of health care.

One area of advancement in health care where questions of value and efficient adoption are especially important is the area of molecularly targeted drugs, which are poised to fundamentally change the treatment of cancer as we know it. Advances in molecular biology and our understanding of the human genome have led to rational drug design, a process whereby scientists first identify molecular targets in the body that lead to disease and then develop drugs that selectively attack these targets. Although this is an emerging field, there are already examples of molecularly targeted cancer drugs that are dramatically improving patient outcomes and quality of life.

A prime example is Gleevec[®], a molecularly targeted drug introduced in 2001 for the treatment of chronic myelogenous leukemia (CML). CML is a cancer that affects a relatively small patient population, but with potentially life-threatening outcomes. The story behind Gleevec's development and adoption illuminates the critical issues health care system stakeholders face in bringing a scientific breakthrough to life. In particular, Gleevec highlights the challenges and opportunities involved in bringing drugs for rare diseases to market and reinforces the importance of examining the value, and not just the cost, of expensive therapies.

Targeting Cancer: Innovation in the Treatment of Chronic Myelogenous Leukemia identifies and analyzes these issues and their impact on major health care system stakeholder groups – patients, manufacturers, physicians, employers, payers and hospitals – and on society as a whole. It is intended to raise awareness of the specific challenges in bringing highly valuable innovations to patients and to identify opportunities to speed the adoption of new medical, information, and care technologies that dramatically improve patient care.

KEY FINDINGS

Gleevec has clearly made history as a medical, scientific and regulatory breakthrough. It has dramatically improved patients' lives. It has created excitement and hope for the future of molecularly targeted cancer treatments, and is a model for fast-track FDA approval. Taking into account all of the costs and benefits of adding Gleevec to the system of care for CML patients, it is a highly valuable innovation to society as a whole and valuable or neutral to major health



care system stakeholders. The fact that it has a positive or negligible impact on all industry sectors is one of the prime reasons behind its rapid adoption and uptake across the health care system.

Small markets can yield big rewards

Gleevec's developer, Novartis Pharma AG, was initially reluctant to make a major investment in a therapy that targets a small market. But thanks to a successful pricing strategy; the drug's use as a chronic, ongoing therapy; and the expansion of indications to include other diseases, Gleevec has become a "mini-blockbuster", generating 2003 global sales of \$1.1 billion. Given the deceptively large market potential presented by molecularly targeted therapies, large pharmaceutical companies should not be afraid to invest in therapies that are initially targeted at small and rare disease populations.

A winning combination can expedite U.S. Food and Drug Administration (FDA) approval

Four factors working in concert facilitated Gleevec's record approval time: (1) its clear efficacy and breakthrough nature; (2) an FDA policy of speeding up the regulatory and review process for life-saving therapies; (3) patient mobilization and involvement before and during clinical trials; and (4) a commitment from Novartis leadership to get Gleevec to market as quickly as possible.

Lack of Medicare coverage is a difficult barrier for patient access to innovations

Medicare's complex policies prohibit coverage of many orally administered, life-saving cancer therapies. The average annual cost for treatment with Gleevec—including the drug and clinician visits—is \$32,724 per patient. Novartis' patient assistance program enabled many CML patients to obtain Gleevec treatment, who would otherwise not have been able to afford the drug.

Variance in physician practice patterns can limit the efficacy of an innovation

After FDA approval, Gleevec treatment shifted from major medical centers, to oncologists and physicians in the community. High awareness of Gleevec in the oncology community led to rapid adoption of the therapy. However, manufacturer market research and NEHI's own analysis of claims data suggest that some patients were given sub-optimal dosages in this early period of adoption. Reasons for this may have included a lack of *specific* knowledge about the latest treatment standards due to the low incidence of CML and an unintended carryover of treatment protocol for previous therapies. This lag period between drug approval and consistent optimal dosing and monitoring is one of the more problematic aspects of assimilating new drugs into the health care system.

Patient activism can be a powerful driver of adoption

Patient demand was a major force behind Gleevec's rapid speed to market and its rate of adoption. Mobilizing through the Internet, patient activists eliminated roadblocks at several crucial points. They persuaded Novartis to accelerate production and make the drug more widely available; advocated enrollment in clinical trials; and helped disseminate information on proper dosing and treatment.



KEY HEALTH POLICY QUESTIONS

This case study of Gleevec raises important issues applicable to molecularly targeted cancer therapies and other emerging medical innovations.

Getting promising drug candidates for rare diseases off of the shelf

Large pharmaceutical firms face significant pressures to produce blockbuster drugs targeted at large patient populations. This business strategy almost derailed Gleevec and often deters investments in treatments for rare, life-threatening diseases.

- How can we make it more likely that promising drugs for small patient populations are not stalled or put on the shelf indefinitely?

Reducing FDA approval time

While the FDA has ramped up its commitment to accelerating approval of life-saving treatments, Gleevec, which was approved after a 72-day review, remains the benchmark for fast-track approval.

- How can the levels of communication that took place among regulators, researchers, physicians and patients throughout the FDA review process be fostered to maximize the efficiency of future reviews?

Value versus cost

Gleevec was priced within the range of less effective and higher risk existing treatments, and ultimately presented a cost-effective new treatment option. This pricing strategy allowed Novartis to gain coverage acceptance and maximize its return on investment for Gleevec without adding significant costs to the overall health care system.

- How will the various stakeholder groups react when an expensive, highly effective targeted therapy is approved for a more widespread disease? Could new therapies be priced according to the value they provide?

Improving the dissemination of new treatment knowledge

Experts hypothesize that molecularly targeted therapies will lead to sub-grouping of diseases to the extent that all cancers may be considered “orphan” diseases. Sub-grouping will make it increasingly difficult for any physician to stay current on the optimal treatment practices for the numerous cancer sub-groups likely to arise.

- Whose responsibility is it to ensure that patients are receiving the best, evidence-based practices? Should the responsibility lie with manufacturers, medical schools, professional organizations, patients or some combination thereof?

Patient communication and empowerment

Patient support groups and registries are often very effective for mobilizing patients suffering from rare and/or life-threatening diseases.

- How could patient support groups be leveraged to speed enrollment in clinical trials and encourage the dissemination of timely and accurate information?



THE NEED FOR ACTION

All sectors of the health care system, not just patients, stand to benefit from the rapid identification and efficient adoption of truly high-value medical innovations. Leaders in all sectors of the health care industry will need to be imaginative as we work together to create fresh answers to these questions. The ultimate need to develop a system of behavioral and financial incentives for physicians, hospitals, payers, and manufacturers that are directly aligned in the best interest of the patients should be the dominant driver in our discussions.

NEHI will continue to work with its membership to address these critical issues. We will educate the public and policymakers regarding the findings from this research and create specific policy recommendations to drive public and private sector change.