

Understanding the Economics of Hematopoietic Cell Transplantation

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“We no longer live in a world where we can ignore the costs of treatments we are recommending”

-Dr. Nandita Khera

Cancer treatments have a huge economic impact on individuals, health care centers and governments. In particular, hematopoietic cell transplantation (HCT) is a highly specialized, resource-intensive technology that can have costly and long-term side effects. HCT is frequently used to treat leukemia and lymphoma. New advances are allowing HCT to be offered to more patients than ever before, including patients with higher risk cancers and those with chronic non-cancerous diseases. Based on the increased demand and rising healthcare costs, there is a need to understand the economics and cost-effectiveness of therapies such as HCT. The objective of these studies is not to limit treatments available to patients, but to provide the most effective therapies – both clinically and economically, while also achieving a better understanding of indirect and intangible costs experienced by patients and their caregivers.

To determine the factors that affect HCT cost across the world, Drs. Nandita Khera and Stephanie Lee, of the Clinical Research Division, reviewed the literature of cost and cost-effectiveness studies in the field of HCT over a 25-year period. The authors highlight the influence of several factors on the cost of HCT, including patient characteristics, conditioning regimens, transplant center experience and post-transplant complications. The authors emphasize the importance of including these cost considerations when new technologies or applications are being developed and disseminated. Furthermore, they suggest expanding the clinician-patient relationship to include discussions about the financial impacts of treatment on the patient and their family and caretakers to help with medical decision-making.

The authors found that the most influential factors contributing to HCT cost are the type of transplant, length of hospital stays and post-transplant complications. Average autologous transplants range from \$36,000 to \$88,000, while allogeneic transplants cost span \$96,000 to

\$204,000 (adjusted to current USD). As expected, reduced intensity conditioning is less expensive (\$80,499 vs. \$128,253) and leads to fewer hospital days (21 vs. 39) compared to high-dose myeloablative regimens. Furthermore, the use of unrelated donors, which is increasing due to improved outcomes, still leads to more frequent complications compared to the use of related donors. The post-transplant complications, including infections and graft failures, are areas where prevention and better management of conditions can yield significant improvements in clinical outcomes and reduced costs and resource usage. Finally, transplant centers that are highly established generally have improved outcomes and lower costs, but this may be offset by treatment of more complex or higher-risk diseases.

Among the greatest challenges to understanding the cost-effectiveness of HCT therapies are the economic burdens felt by patients and their families. Direct costs, including medical treatments, hospitalizations and medications are generally well recorded. More difficult to ascertain are the indirect expenses such as transportation and other out-of-pocket costs that patients incur during treatment. Intangible costs, including lost productivity and time away from work, further contribute to the difficulty in measuring HCT cost burdens. The authors suggest that advances in understanding cost-effectiveness should include analysis of long-term costs, indirect and intangible financial burdens experienced by the patient, effects of reduced-intensity conditioning compared to myeloablation and the prevention and treatment of relapses.

A better understanding of the real direct, indirect and intangible costs associated with HCT can better inform clinicians, patients and policymakers about how to best share resources. Understanding the cost-effectiveness of cancer treatments yields the promise that patients will receive treatments that are not only effective, but are also less financially burdensome to society and minimally disruptive to patients and their support systems.

[Khera N, Zeliadt SB, Lee SJ](#). 2012. Economics of hematopoietic cell transplantation. *Blood*, Epub ahead of print, doi:10.1182/blood-2012-05-426783.