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EDITORIAL

Effective medicine and the economy



If we tried practicing the perfect medicine according to international guidelines and using the most efficient diagnostic procedures and medications, it is quite possible that the health budget of a third-world developing country would run out within weeks. This becomes more obvious when studying or treating rare (Gaucher, nocturnal paroxysmal hemoglobinuria) or highly complex (cancer transplants) diseases. The most popular medical guides, which are incidentally very trendy nowadays, are usually developed in first world countries. For Mexico, the ones created in the United States (US) are often the most attractive for vicinity reasons, and because they come from the most powerful country in the world. We ought to keep in mind that Mexico's per capita income is under USD 9000 a year, compared to the USA's 55,000 dollars a year. This explains the difficulty of trying to match our medicine to the one practiced in the US in resources and costs represents.

Recently, several countries, including the US, have stressed the high cost of new medications, making them unaffordable for the public health system, and sometimes, even for the private sector. A good example can be observed in the new drugs for cancer treatment, among them is chronic granulocytic leukemia (CGL). CGL is a hematologic neoplasia with a worldwide prevalence of approximately 1.2–1.5 million patients. It occurs more frequently amongst adults, regardless of the patient's economic status, and is characterized by presenting the Philadelphia chromosome, which generates the Bcr-abl gene with tyrosine kinase activity, which is responsible for perpetuating the disease. However, there are medications, such as imatinib, which has been approved since 2001, and the new Bcr-abl tyrosine kinase inhibitors (TKIs), which act as targeted therapy to treat this disease. These medications have been, without a doubt, the most successful pharmaceuticals developed for cancer, exceeding all expectations for CGL patients. In fact, with the use of TKIs, LGC's annual mortality rate is 2%, compared to the historical control of 10–20%. Moreover, the estimated survival rate at ten years went from under 20% to over 80%. All of the above, however, is provided the patient receives proper treatment with an indefinite adherence. This causes patients who lack insurance to become

financial victims, having to pay high costs annually to remain alive.

The annual cost of treatment for TKI varies, depending on the region where it is commercialized and its generation. For example, imatinib was the first to be created and ranges between USD 24,000 (Russia) up to USD 92,000 (US) per patient per year. In the case of dasatinib, considered to be one of the new TKIs, it costs vary from an estimated USD 22,000 (South Korea) up to USD 1,230,000 (US) per year.¹ In Mexico, the annual cost is USD 29,000 for imatinib and USD 49,500 for dasatinib.² Social security institutions in Mexico and probably in many similar countries obtain significant discounts. Nevertheless, because it is a prolonged treatment of continuous use, even over 10–15 years in the majority of cases, the cost is truly astonishing, since there are new patients every year and the disease, which used to cause the deaths of almost everyone of them, does not anymore. Hence the prevalence of this leukemia increases day by day, and consequently the cost of its treatment.

Several actions have been taken in an attempt to improve this alarming situation, some of them consist of adopting more economical and profitable methods, which will in the long-term achieve a longer survival rate. It is important to take into account the fact that high costs begin with those necessary to make a correct diagnosis, many times utilizing sophisticated methods, such as the use of molecular biology tools. Searching for better paths to reduce costs without losing quality is useful, especially in developing countries, which represent over 80% of the world's population. As an example of the above, an analysis was published proposing a therapeutic focus for CGL which adapts to a limited-resource environment. This analysis includes alternatives like hematopoietic cell transplants, which in the long run are even more cost-effective. Moreover, there are actions from a different perspective in which a petition to the US Congress has been filed to bring prices of medications against cancer down. This petition has gathered over 39,000 signatures through the platform change.org.^{1,2}

Another notable example of adapting complex therapeutic interventions within health systems with limited resource

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availability is the hematopoietic cell transplant (HCT), which constitutes contemporary management with the most efficiency in multiple diseases, notably hematologic ones, including CGL, acute leukemias and lymphomas, among others. This procedure in most industrialized countries is carried out following complicated and costly clinical and laboratory guides, which, if followed to the letter, would make this procedure almost impossible in low- and middle-income countries. In response to the need to apply this therapeutic resource in a broad and generalized manner in less powerful economies, an accessible, effective and the outpatient HCT program was developed in our country. This resulted in its implementation in several centers that adopted these guidelines from a perspective of analysis and optimization of costs for more than a decade, to the benefit of a considerable number of these patients. In general, the most affordable cost of HCT in the US is USD 100,000, and €80,000 in Europe. At the University Hospital of the UANL, Monterrey, Mexico, this cost is around USD 10–15,000, a fraction of the cost of the same in high-income countries. This is possible due to an austerity and optimization approach in the use of drugs and procedures. Added to the efforts of medical, laboratory and nursing personnel to pay extreme attention to detail in the management of these patients, with a commitment to detect and take advantage of opportunities in savings and improvement in medication doses, duration, and costly procedures. In addition to the collaboration and support of the institutions in which these transplants are carried out and non-governmental organizations focused on patient well-being.³ On the other hand, the Foundation for the Accreditation of Cellular Therapy of the USA (FACT) granted the bone marrow transplantation unit of this University the certification that guarantees its quality (unique in Mexico and Latin America). Which is comparable from this point of view to that of any similar institution in the USA.

In conclusion, the development and application of an accessible and effective medical practice, mainly in countries such as ours, depends on its careful planning and a culture of continuous improvement in the application of resources for health, with the aim of providing the patient attention of the highest quality with the least expense of resources and an ambitious long-term vision. In other words: the best medicine at the lowest possible cost.

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