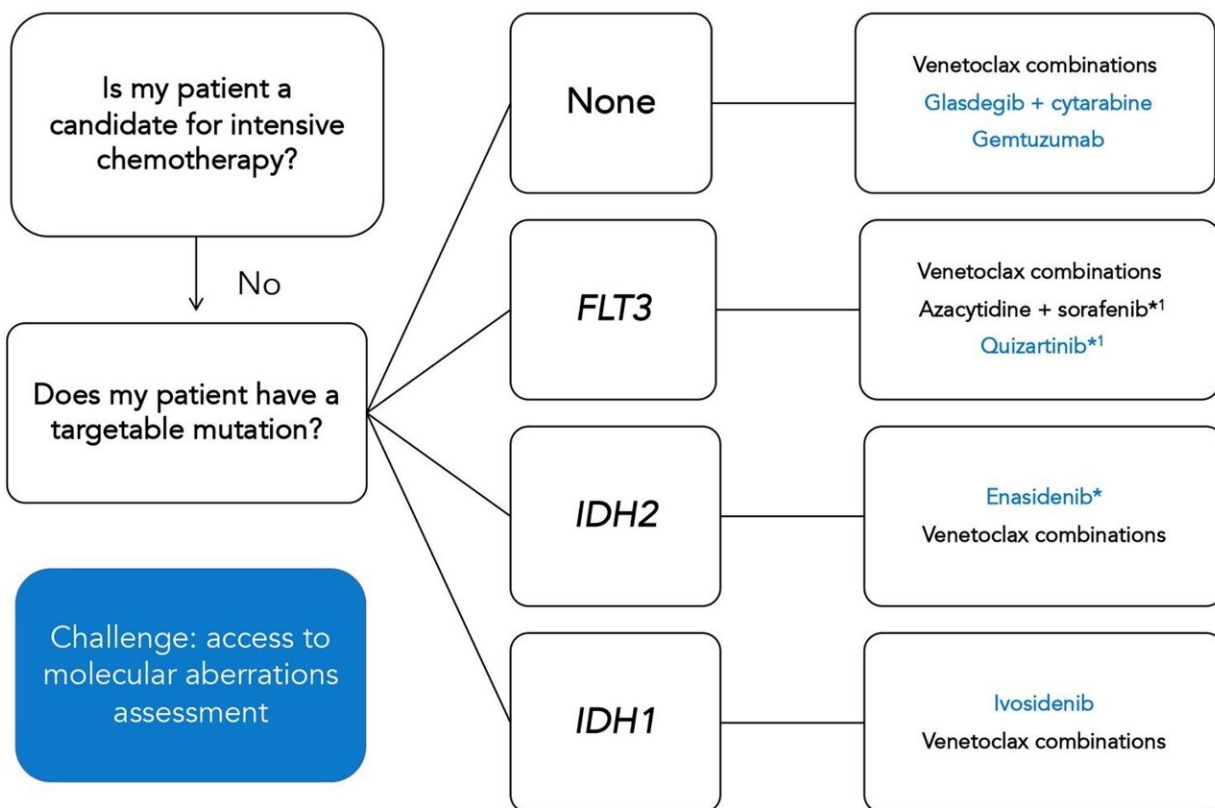


# Resource shortages and technological lag remain obstacles for acute myeloid leukemia treatment in Latin America

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Drugs in blue unavailable in Latinamerica

\*These combinations are not FDA approved <sup>1</sup>Only for FLT3-ITD mutations

Adapted treatment algorithm for patients with acute myeloid leukemia who judged not to be candidates for intensive chemotherapy. Credit: *Hematology* (2023). DOI: 10.1080/16078454.2022.2158015

Acute myeloid leukemia (AML) is a cancer type that originates in the bone marrow. Despite being considered a rare disease, it is the most common type of acute leukemia and progresses rapidly, necessitating immediate treatment.

While many advancements have been made in the disease's treatment, these resources are not fully accessible in underdeveloped countries. This situation has prompted Latin American scientists to seek a comprehensive understanding of AML on their continent, primarily focusing on the therapies and diagnostic methods available for this population.

The study, [published in the \*Hematology Science Journal\*](#), relied on the review of epidemiological records and was coordinated by the D'Or Institute for Research and Education (IDOR), in partnership with the University of São Paulo (USP), Universidad Autónoma de Nuevo León, and the Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán.

It also had the support of collaborators in 15 Latin American countries. "Studies like this provide opportunities for excellent scientific collaborations because often one country has more expertise in certain techniques or treatments. This exchange of knowledge generates human resources for Latin America," says the research coordinator, Dr. Eduardo Rego, a hematologist researcher at IDOR and a professor at the University of São Paulo (USP).

Leukemia occurs when the bone marrow, responsible for producing [blood cells](#) such as [red blood cells](#) (erythrocytes) and [white blood cells](#) (leukocytes), starts to produce and release immature cells called blasts into the bloodstream in a disordered manner. These blasts do not function like adult cells and begin to harm other organs in the body. In the case of AML, it is observed a proliferation of myeloid cells, usually

leukocytes, and, more rarely, mast cells or macrophages.

AML diagnosis is more common in adults, especially the elderly, but it can also occur in children.

Specialized tools are employed for the diagnosis of the disease, such as flow cytometry (used to count and classify cells in the blood), cytogenetic evaluations (which include reading the karyotype and identifying chromosomal abnormalities), and molecular tests (with mutation analysis) to guide appropriate therapies.

Current recommendations include using 8-color [flow cytometry](#) to establish immunological markers, but this resource is not always available in Latin America, where most laboratories still work with four colors, reducing the accuracy of the examination to identify residual disease in patient samples.

Furthermore, while comprehensive genetic testing is already a reality in developed countries, some Latin American countries still struggle with standardizing karyotype tests, the technique responsible for studying the patient's chromosomal abnormalities. According to the study, between 2010 and 2018, a successful karyotype analysis was performed in 46% to 61% of cases, indicating the need for better training of teams in Latin America.

This is in addition to the accessibility limitations of these tests, which can even surpass the treatment costs.

The availability of therapies for [acute myeloid leukemia](#) also varies between high- and low-income countries, showing heterogeneity even among Latin American countries.

In one of the primary treatments for AML, intensive induction

chemotherapy, whose main objective is to eliminate a large portion of cancerous blasts, the early mortality rate varies between 3% and 6%, according to recent clinical trials. However, when implemented in low- and [middle-income countries](#), these rates increase; in Brazil, it reaches 41% among older adults.

The authors believe that this disparity could be reduced through urgent treatment measures for patients with highly elevated white blood cell counts, as they have the highest mortality rate during induction treatment. Another issue is the patient's profile, as many already have comorbidities that worsen the disease.

Additionally, treatment delays due to waiting for genomic results and shortages of chemotherapy due to mismanagement of government resources are also constant obstacles faced in Latin American countries.

"One interesting aspect of this study is that we compared aspects of acute myeloid leukemia not only between Latin America and developed countries but also among Latin American countries themselves. It's a highly heterogeneous scenario, even within Brazil. In the country, we have a greater concentration of resources in the Southeast region, which also reflects in the availability of AML therapies," the researcher notes.

In addition to chemotherapy, another essential treatment for severe cases of AML is [bone marrow](#) transplantation, now referred to as hematopoietic stem cell transplantation. In this technique, the disease is treated more aggressively with known marrow-toxic drugs, and recovery occurs from the patient's young cells or from donor cells. When a patient's cells are used, it is called autologous transplantation, and when cells come from a donor, it is called allogeneic.

In Latin America, the haploidentical donation has been a significant facilitator of allogeneic transplants. In this method, only 50%

compatibility is needed for the transplant, which is usually done by a first-degree relative of the patient.

This medical advance avoids waiting for a more compatible volunteer, a challenge that is difficult to overcome when most Latin American countries lack unrelated donor registries, with Brazil being an exception through the Brazilian Registry of Volunteer Bone Marrow Donors (REDOME).

In the absence of donors, the study also considers that autologous transplantation should be an effective and economical option in Latin America, as it reduces the chance of adverse effects such as the need for blood transfusion and hospitalizations.

The article mentions that this strategy was studied in previous research, where autologous transplants were performed in patients after chemotherapy treatment. The overall survival of participants at two years ranged from 74% to 79%, with a disease-free survival of 61%.

Based on the specifics of AML diagnosis and treatment in Latin America, the authors emphasize that scientific collaborations led by Latin American researchers are paramount to better adapting therapies to the needs of these countries. They also stress the importance of investing in clinical education and accessible therapies in Latin America and other low- and middle-income countries facing similar challenges and disparities related to the disease.

**More information:** Andrés Gómez-De León et al, Acute myeloid leukemia: challenges for diagnosis and treatment in Latin America, *Hematology* (2023). [DOI: 10.1080/16078454.2022.2158015](https://doi.org/10.1080/16078454.2022.2158015)

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