VENETOCLAX AND AZACITIDINE AS FRONT-LINE INDUCTION THERAPY IN MEDICALLY FIT NEWLY DIAGNOSED ACUTE MYELOID LEKUMIA

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INTRODUCTION

Acute myeloid leukemia is a rapidly progressing myeloid neoplasm characterized by the clonal proliferation of immature myeloid cells in the peripheral blood and bone marrow. Management of AML with standard induction therapy (3 + 7) poses significant challenges due to higher rates of infection leading to increased mortality and severe financial burden, especially in LMICs where out-of-pocket expenditure affects 80% of patients. Up till now, induction with Azacitidine and Venetoclax is a treatment approach for newly diagnosed patients who are ineligible for induction chemotherapy,

We decided to use Azacitidine with modified doses of Venetoclax along with Azole (Voriconazole) in newly diagnosed patients who are fit for intensive therapy to decrease hospital admissions, morbidity, mortality and financial burden. Moreover estimated mortality rate with 3 + 7 induction in Pakistan is about 30-40%.

OBJECTIVES

This study assesses the cost, efficacy, safety, and clinical outcomes of Azacitidine and Venetoclax induction in newly diagnosed medically fit AML patients.

METHODS

A prospective study was conducted at Hameed Latif Hospital, Lahore, Pakistan. It included 12 patients with a median age of 46 diagnosed between September 2023 and February 2025. In addition to epidemiologic data on the duration of admission, platelets, and packed cell transfusions, the use of antibiotics was documented, and financial expenditures were calculated.Response evaluation was done after 2 cycles with bone marrow biopsy.

DEMOGRAPHIC PARAMETERS	NUMBER OF PATIENT/PERCENTAGE%
GENDER	
Male	6(50%)
Female	6(50%)
AGE GROUP YEARS	
30-40	5(45%)
40-50	4(36%)
50-60	2(16%)
60-80	1(8%)
AML MUTATION RESPONSE	
Good Risk	3(25%)
Intermediate Risk	5(41%)
Poor Risk	0(0.00%)
ECOG PERFORMANCE STATUS	
0	7(58%)
1	5(41%)

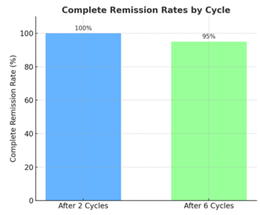
STUDY

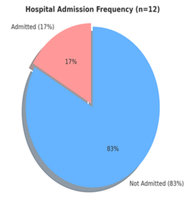
The study included 14 patients with a median age of 46 years. AML was diagnosed via flow cytometry, on bone marrow aspirate. 92% (n=11) of patients underwent an AML mutation panel. Risk assessment was done as per standard protocol via molecular studies and cytogenetics. As per the results, 73% (n=8) patients had intermediate risk, and 27% (n=3) had good risk. 70 % of patients underwent up to 5 blood and megaunit transfusions. The median number of blood/ megaunit transfusions was 5. The estimated cost of 1 megaunit transfusions was USD 235$ (PKR 75,000), and packed red cell unit cost USD 70$ (PKR 20,000). Two patients were admitted during the first cycle of induction therapy due to infections (Pneumonia) for a maximum of 7 days. The estimated cost on hospital admission was USD1800$ (PKR 5,00,000). Moreover standard induction therapy (3 + 7) cost almost USD 12000$ (PKR 30,00,000) versus cost of induction therapy USD 4500$ (PKR 12,00,000) with 2 cycles of modified doses of Azacitidine and Venetoclax.

DRUGS AND BLOOD	COST
PLATELET TRANSFUSION	235$ (PKR-75000)
BLOOD TRANSFUSION	70$ (PKR- 20,000)
1 CYCLE OF AZA/VENETOCLAX	4500$ (PKR-1270,000)
1 CYCLE OF 3 + 7	12000$ (PKR- 3,384,000)

Results

Response assessment was done after 2 cycles. 100% (n=12) are in complete remission. Second response assessment was done after 6 cycles and almost 95% patients are in complete remission.





SUMMARY

This prospective single-center study evaluated the frontline use of Azacitidine combined with modified-dose Venetoclax (in combination with voriconazole) in 12 newly diagnosed, medically fit AML patients in Pakistan. The regimen achieved a complete remission rate of 100% after two cycles, with sustained remission in 95% of patients at six cycles. The treatment was associated with reduced hospitalization rates, moderate transfusion requirements, and lower direct medical costs compared with conventional intensive induction. These results suggest that this lower-intensity regimen can deliver high efficacy while minimizing resource utilization in LMIC settings.

DISCUSSION

Our findings indicate that Azacitidine plus Venetoclax can be an effective alternative to intensive chemotherapy for medically fit AML patients, particularly in settings where infection-related morbidity, prolonged hospitalization, and financial burden are significant concerns. The 100% remission rate observed after two cycles aligns with or exceeds outcomes reported in older, unfit patient cohorts from previous VIALE-A trial data, suggesting that fit patients may derive comparable benefit from this regimen.

Importantly, the reduced need for inpatient care — with only two patients requiring short-term admission for infection management — has meaningful implications for healthcare resource allocation in LMICs. The transfusion burden and associated costs were also lower than those typically reported with 3+7 induction, potentially improving treatment accessibility and adherence.

The strengths of our study include its prospective design and real-world applicability in a resource-limited setting. However, limitations include the small sample size, single-center scope, and absence of a direct comparator arm. Longer follow-up is required to assess overall survival, relapse rates, and long-term tolerability.

Future research should explore randomized comparisons between this regimen and standard intensive therapy in fit patients, investigate optimal Venetoclax dosing in the context of azole co-administration, and assess patient-reported quality of life outcomes. If validated, this approach could represent a paradigm shift in AML induction therapy, balancing efficacy with safety and economic feasibility.