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A Clinical Decision Support System for Leukemia based on Artificial Intelligence

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Event Website: **https://www.globalcea.org/icehtmc**

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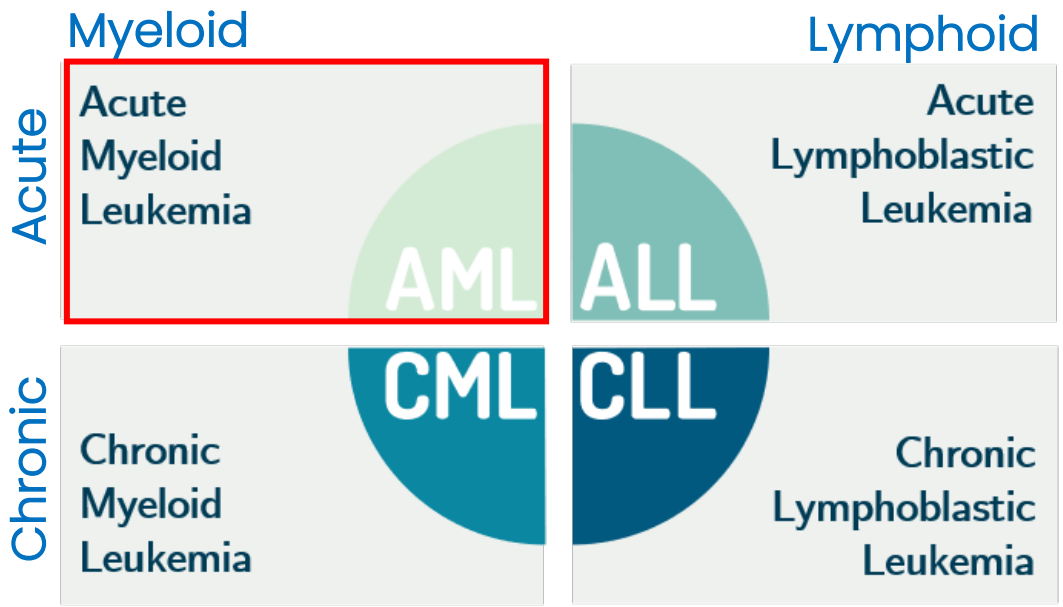
Acute Myeloid Leukemia

Leukemia — heterogeneous group of hematologic diseases characterized by neoplastic proliferation of an haemopoietic stem cell

→ blasts (or leukemic cells)



Risk stratification of AML patients

1. Favorable
2. Intermediate
3. Adverse

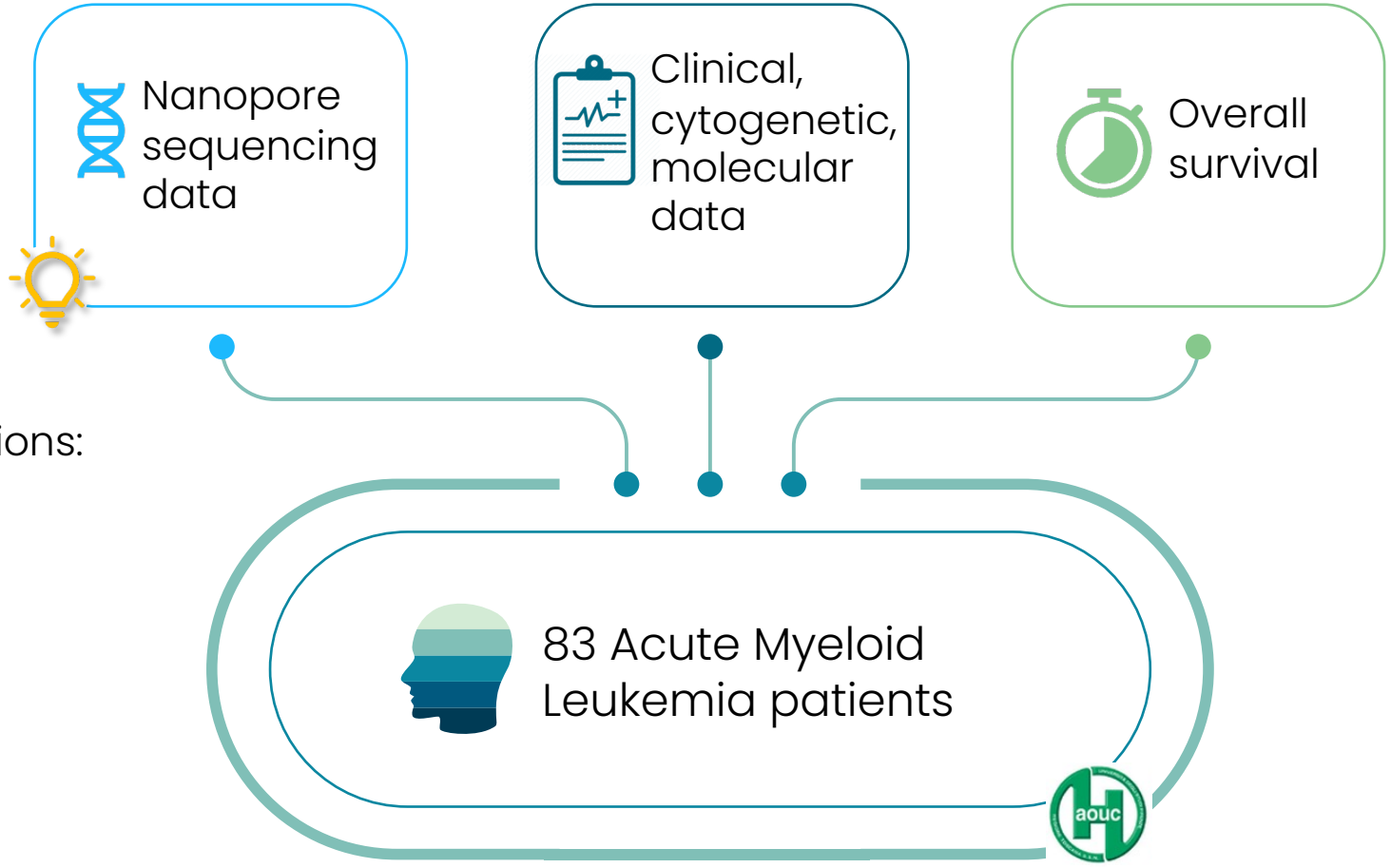
High heterogeneity
in terms of survival

? **Causes**
are not known

A **new category of mutations**
has been investigated

- Treatment intensity decision
- Assessment of transplantation necessity

Materials

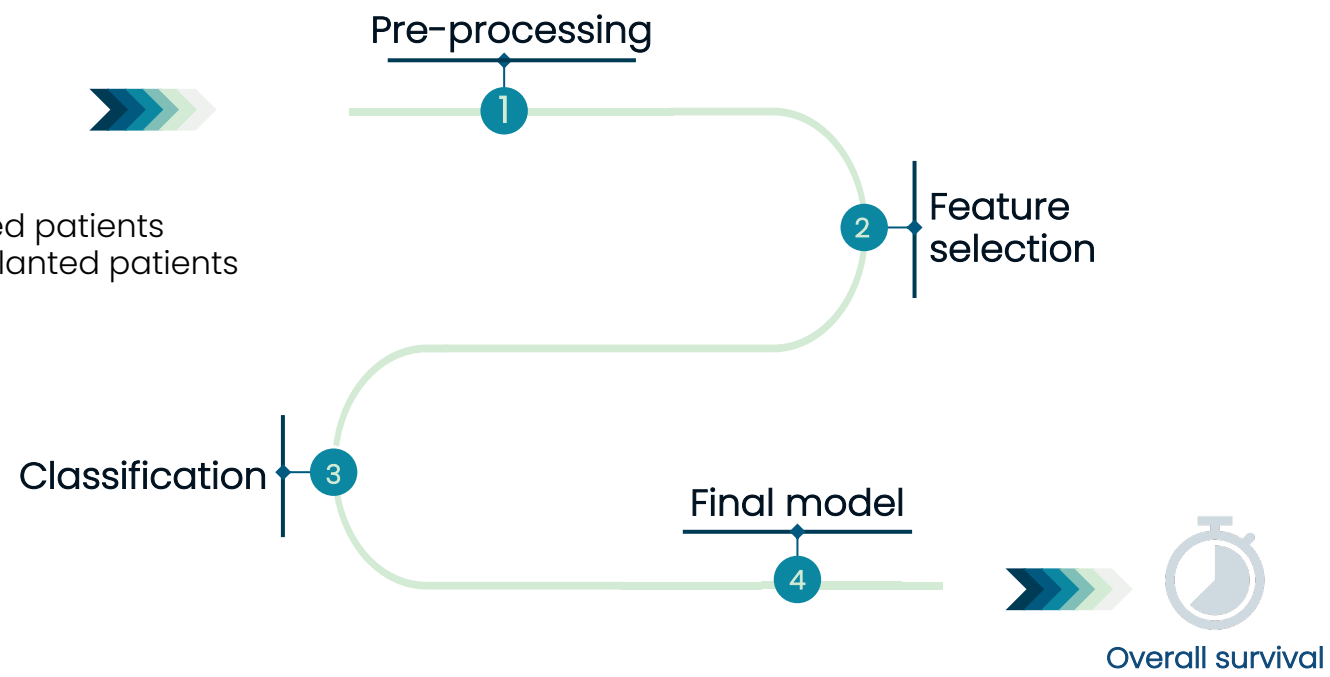


Copy Number Variations:

- Type (loss or gain)
- Range of length
- Variant allele frequency

Methods

- Transplanted patients
- Non-transplanted patients



Tested **classifiers**:

1. k-Nearest Neighbors
2. Support Vector Machine
3. Decision Tree
4. Random Forest
5. Naïve Bayes
6. Logistic Regression

Results

Best performance

Database	Algorithm	Accuracy
Non-transplanted patients	Logistic Regression	83,3%

Conclusions

- ✓ This study proves that the number, type and length of Copy Number Variations in AML patients constitutes a valuable feature to build a Clinical Decision Support System based on Machine Learning to predict Overall Survival

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