

# Acute myeloid leukemia with myelodysplasia-related changes (AML-MRC) is an AML subtype with a poor prognosis

## The WHO 2016 diagnostic criteria for AML-MRC<sup>1,2</sup>

✓ Defined as **patients with AML who have ≥20% blasts** in the peripheral blood or bone marrow and any of the following<sup>1,2</sup>:

- Previously documented MDS or MDS/MPN
- MDS-related cytogenetic abnormalities
- Multilineage dysplasia in ≥50% of ≥2 cell lineages in the absence of *NPM1* or biallelic *CEBPA* mutations

## X Excluding factors<sup>1,2</sup>:

- Any of the cytogenetic abnormalities qualifying for diagnosis of AML with recurrent genetic abnormalities, such as *inv(3)*, *t(6;9)*, or *NPM1* mutation
- Prior cytotoxic therapy for unrelated disease

## AML-MRC is not included as a category in the ICC and WHO 2022 classifications<sup>3,4</sup>:

- ICC 2022:** prior MDS or MDS/MPN is used as a diagnostic qualifier, AML with myelodysplasia-related cytogenetic abnormality and AML with myelodysplasia-related gene mutation are separate categories, and multilineage dysplasia is not included
- WHO 2022:** a type of AML with defining genetic abnormalities “AML-MR” replaces AML-MRC and includes AML transformation of MDS or MDS/MPN and AML with MDS-related cytogenetics or gene mutations; multilineage dysplasia is not included

## MDS-related cytogenetic abnormalities sufficient to diagnose AML-MRC (WHO 2016 classification)<sup>a,1,2</sup>

### Complex karyotype

- ≥3 unrelated abnormalities, not including the recurrent cytogenetic abnormalities encountered in AML

### Unbalanced abnormalities

- 7/del(7q)
- del(5q)/t(5q)
- i(17q)/t(17p)
- 13/del(13q)
- del(11q)
- del(12p)/t(12p)
- idic(X)(q13)

### Balanced abnormalities

- t(11;16)(q23.3;p13.3)
- t(3;21)(q26.2;q22.1)
- t(1;3)(p36.3;q21.2)
- t(2;11)(p21;q23.3)
- t(5;12)(q32;p13.2)
- t(5;7)(q32;q11.2)
- t(5;17)(q32;p13.2)
- t(5;10)(q32;q21.2)
- t(3;5)(q25.3;q35.1)

<sup>a</sup>Sufficient to diagnose when ≥20% peripheral blood or bone marrow blasts are present and prior therapy has been excluded.

## AML-MRC primarily occurs in older patients<sup>5,6</sup>

AML-MRC represents up to 48% of all adult AML cases<sup>5,6,14</sup>



Median age at diagnosis<sup>5</sup>:  
**68** years

## Diagnostic testing for AML-MRC (WHO 2016 classification)<sup>12</sup>



**Clinical history:** Obtain a thorough patient history and all relevant clinical data



**Cytogenetic analysis:** Perform cytogenetic analysis and/or FISH testing to identify cytogenetic abnormalities



**Mutational analysis:** Perform *NPM1* and *CEBPA* in cases defined by morphologic analysis alone



**Morphologic evaluation:** Analyze a fresh bone marrow aspirate smear in conjunction with a bone marrow trephine core biopsy, bone marrow trephine touch preparations, and/or marrow clots

## AML-MRC is associated with poor clinical outcomes<sup>7-12</sup>

AML-MRC treated with conventional chemotherapy:

Complete remission rate:  
**24%<sup>13</sup>–61%<sup>7</sup>**

Median overall survival<sup>7</sup>:  
**10 months**