Ontario Health
Cancer Care Ontario

Guideline MOTAC-6 Version 2

A Quality Initiative of the Program in Evidence-Based Care (PEBC), Ontario Health (Cancer Care Ontario)

Minimal Residual Disease Testing in Acute Leukemia

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An assessment conducted in December 2025 deferred the review of Guideline MOTAC-6 Version 2. This means that the document remains current until it is assessed again next year. The PEBC has a formal and standardized process to ensure the currency of each document (PEBC Assessment & Review Protocol)

GL MOTAC-6 is comprised of 6 sections. You can access the summary and full report here:
https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/63341

Section 1: Recommendations
Section 2: Recommendations and Key Evidence
Section 3: Guideline Methods Overview
Section 4: Systematic Review
Section 5: Internal and External Review
Section 6: Document Assessment and Review

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Section 1: Recommendations

This section is a quick reference guide and provides the guideline recommendations only. For key evidence associated with each recommendation, the systematic review, and the guideline development process, see the Full Report.

GUIDELINE OBJECTIVES

- To provide evidence surrounding the clinical utility[1] of minimal/measurable residual disease (MRD) testing using multiparameter flow cytometry (MFC), next-generation sequencing (NGS), or polymerase chain reaction (PCR)-based methods in patients with acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML).

TARGET POPULATION

Adult patients with a diagnosis of acute leukemia (i.e., AML or ALL).

INTENDED USERS

This guideline is targeted for:

- Clinicians, laboratory physicians, and scientists involved in the care and testing of patients with acute leukemia.
- Policy makers, health care administrators, and the Ontario Ministry of Health.

PREAMBLE

MRD testing refers to the evaluation of very small amounts of a biomarker(s) that signals the presence of residual disease beyond that detectable by conventional, less-sensitive testing methods. In acute leukemias, the use of MRD testing using bone marrow or blood is routine, as these assays provide prognostic information for clinicians and patients. Indeed, the most recent guidelines from international expert panels, the European LeukemiaNet [1] and the National Comprehensive Cancer Network [2], agree that MRD assessment in all ALL and AML is important to provide the most comprehensive prognostic information in order to be able to discuss the disease with patients and families.

What is not as well established is the ability of MRD testing to behave as a predictive factor to provide information that the course of treatment can be confidently escalated or de-escalated to provide the highest survival while minimizing the morbidity and mortality in appropriate cases. This ability has not yet been clearly demonstrated, particularly in the adult acute leukemias. Therefore, this review seeks to examine and collate the evidence that would allow expansion of the role of MRD testing in the adult population from a prognostic test to one that guides treatment.

This review does not evaluate optimal methods for MRD detection, nor does it recommend specific markers for testing. Both the testing modality and the set of biomarkers that could be assessed are rapidly evolving fields, and decisions about these practical aspects of MRD testing will require constant review.

[1] Clinical utility refers to the ability of the test to provide information that is useful to direct treatment and ultimately improve patient outcome. This is in contrast to prognostic utility (or prognosis), which gives information about likely survival time but does not address whether or not a treatment would be beneficial.

RECOMMENDATIONS

Recommendation 1
MRD testing may be considered as an aid to help select between various treatment options in adult patients with ALL (i.e., adjustment of treatment intensity/interventional treatment stratification), in addition to its prognostic capabilities.
Qualifying Statements
• The timing of MRD testing is variable and depends, in part, upon the treatment regimen and the type of test being used. • Although MRD can be measured in either bone marrow or peripheral blood, bone marrow is recommended as there may be discordance between the two measurements, potentially underestimating the disease burden if only blood is monitored. • While the prognostic information from MRD testing is accepted in clinical practice and used to inform patients of their prognosis, the ability of MRD testing results to be predictive of adult ALL patient response to different treatment options (escalation or de-escalation) is not yet established • While the adjustment of treatment intensity based on MRD testing results has been tested in the pediatric population with convincing results, similar analysis has not been conducted in the adult population. Confirmatory studies are needed in the adult literature. • Decisions to reduce or increase the intensity of treatment, based on the MRD results, should be restricted to clinical trials, if available, as a positive outcome has not yet been confirmed in adults with ALL. Ongoing trials with a focus on adjusting the intensity of therapy with novel agents that add efficacy with limited toxicity are needed to clarify whether this approach will improve survival. • MRD may be required for eligibility for specific therapy, in which case testing should be done when consideration is made for therapy as per treatment guidelines. • MRD testing should be conducted using clinically validated tests with suitable sensitivity and specificity metrics and clinically accepted thresholds to define MRD.

Recommendation 2
There is currently insufficient evidence for or against the use of MRD testing to guide the choice between various treatment options in adult patients with AML (i.e., adjustment of treatment intensity/interventional treatment stratification) outside of its pre-defined prognostic capabilities.
Qualifying Statement
The prognostic information from MRD testing in adult patients with AML is well understood and can be used to inform patients of their prognosis.