

Information Sheet KD00439134

Preanalytics for Leukemia Diagnostics**ZPL Hematology and Oncology Children's Hospital Zürich**

1. Flow Cytometry**1.1 Preanalytics**

A prerequisite for a meaningful investigation is the collection of representative material, imperatively at the time points of FCM-MRD.

For this reason, the **first aspirate** for flow cytometry should be obtained directly. To maximize the sensitivity of the assay and avoid hemodilution of bone marrow samples.

Label the specimen material with number 1 FLOW, and for additional test tubes, mark the appropriate order of aspiration.

Heparin-anticoagulated bone marrow (without addition of separating gel or latex particles) is suitable as test material.

As an exception, peripheral blood may be used in the case of an initial diagnosis with punctio sicca.

Transport must take place immediately at room temperature.

2. Cytomorphology

A prerequisite for a meaningful examination is the collection of representative material and professional preparation. Smears of peripheral blood, bone marrow, and other liquid puncture materials (usually cerebrospinal fluid) are suitable as examination material. Send in non-stained smear preparations. Allow to dry for at least 30 minutes before sending.

2.1.1 Blood smears

Good quality blood smears have a gradually decreasing density so that the erythrocytes are isolated next to each other and finer nuclear structures of the leukocytes can be recognized. Send 4-6 blood smear preparations.

2.1.2 Bone marrow smears

Prepare smears from approx. 1mL bone marrow aspirate without addition. It must be processed very quickly, as the material coagulates within a few seconds.

Care must be taken to ensure that sufficient bone marrow particles are transferred to the slides. The particles are scraped off the slides with the undriz glass. The undriz glass is pushed quickly and without pressure over the slide at an angle of approx. 30 - 45 degrees and the material is traced with it. Send 6-8 bone marrow preparations.

2.1.3 CSF cytopsin preparations

Submission of 2 native cytopsin preparations, for the assessment of the CNS status, the indication of cell number and condition is required (see leukemia order form). For the preparation, it is recommended to first place one drop of albumin 20% in the cytocentrifuge cuvette and then pipette 500 µL native CSF.

3. Genetics

A prerequisite for a meaningful examination is the analysis of representative material. Hemodilution of bone marrow samples can lead to false-negative genetic results.

Heparin-anticoagulated bone marrow (without addition of separating gel or latex particles) is suitable as test material.

As an exception, peripheral blood may be used in an initial diagnosis with punctio sicca if at least 10% blasts are washed out.

For MRD analyses, the sample should contain at least 10 million leukocytes.

Send 4-6 bone marrow preparations for FISH. Prepare the preparations as described in 2.1.2.

Transport of the liquid material must be done immediately at room temperature, as the material should be processed at the latest 24 hours after collection.

For molecular genetic purposes that include an NGS analysis, we also require an EDTA sample.