LEUKEMIA FORMS

The guidelines and figures below are specific to Leukemia studies. The information in this manual does NOT represent a complete set of required forms for any leukemia study. Please refer to the most recent version of the appropriate protocol for complete forms and submission requirements.

Previously Untreated Acute Myeloid Leukemia Onstudy

Disease Description

The WHO definitions of AML have been adopted over the previously used FAB definitions. The most significant recent change was lowering the threshold for the diagnosis of AML from 30% to 20% blasts in the peripheral blood and/or marrow aspirate. Another change was not relying on cellularity of the bone marrow at baseline or after treatment. These changes only apply to AML protocols; read on for definitions used in other leukemia trials.

Acute myeloid leukemia (AML) includes diagnoses such as acute myeloblastic leukemia or acute granulocytic leukemia.

Clinical Onset of AML: This item records whether the patient's AML might be related to prior leukemogenic therapy and/or to prior myelodysplastic syndrome (MDS) or other hematological disorder.

De novo: Check this item if the patient had no clinical history of prior chemotherapy or radiation therapy that might have led to the development of AML, and did not have a clinical history of MDS. If "De novo" is checked, then neither "Therapy-related" nor "Prior hematologic disorder" should be checked.

Therapy-related: Check this item if the patient had a prior history of potentially leukemogenic chemotherapy or of radiation therapy. If "Treatment-related" is checked, then "De novo" should not be checked.

Prior hematologic disorder: Check this item if the patient had a clinical history of MDS or other hematological disorder. If "Prior hematologic disorder" is checked, then "De novo" should not be checked. You may be asked to select the specific hematologic disorder (MDS, MPN, or MDS/MPN overlap) and provide the date of diagnosis.

Current Laboratory Values

This section records information regarding findings from the last peripheral blood studies and bone marrow biopsy/aspiration done prior to registration on protocol.
Previously Untreated Acute Lymphoblastic Leukemia Onstudy

Disease Description

The information used to report the patient's leukemia should be taken from the most definitive pathology or bone marrow biopsy report available. The subclassification for acute lymphocytic leukemia (ALL) is based on those developed by the World Health Organization (WHO). Detailed diagnostic criteria are given in each protocol. Check the box corresponding to the WHO classification of the patient's ALL.

Some studies may still reference the French-American-British (FAB) classification system for ALL as in the section below re: Relapsed/refractory ALL.

ALL includes diagnoses such as acute lymphoid leukemia, acute lymphatic leukemia, or acute lymphoblastic leukemia.

Extramedullary Disease

These items record the patient's status in terms of disease outside the marrow and circulatory system. Extramedullary disease is most often detected in the central or peripheral nervous system, gingival hypertrophy, as a mediastinal mass or in the skin (referred to as leukemia cutis). Assessment of these disease sites should be done Prestudy and at each disease assessment during and after treatment.

Organ Involvement

There may also be disease related organ involvement such as hepatomegaly, splenomegaly or lymphadenopathy.

Immunophenotype

Check the pathology report from most recent marrow biopsy for specific type of ALL. T-cell, Pre B cell and B-cell are most common, but you may find some other qualifier or if your pathologist cannot provide this information, use 'Unknown.'
Relapsed/Refractory Acute Lymphoblastic Leukemia Onstudy

Disease Description

Diagnosis: The differential diagnosis of ALL is based on the presence of FAB L1, L2, or L3 morphology with negative staining for myeloperoxidase or Sudan Black (myeloid pattern), negative staining for non-specific esterase (myeloid pattern), and the presence of lymphoid-associated antigens. \((20, 21)\) In the setting of relapsed or refractory disease 5% lymphoblasts in the bone marrow at least 4 weeks after having received induction therapy. See Section 4 of the protocol for more details.

Disease Status

To have refractory disease, the patient must have failed to achieve complete remission after the most recent induction attempt. To be in relapse, a patient must have achieved a complete remission and been diagnosed with recurrence of ALL. Each relapse following a complete remission should be considered when calculating number of relapses. Select only one of the status descriptions for this item.

Treatment Related to this Cancer

Prior treatment refers to disease-related treatment that the patient received prior to registration on the current protocol. This includes remission induction; post-remission therapy such as consolidation, maintenance or intensification; preparative regimens for bone marrow transplantation; or therapy given to control active disease, e.g., to control peripheral blood counts.

Prior treatment pertains only to the cancer being treated on protocol, not other diseases or malignancies the patient may have had.

**Treatment Description**: Record the agents included in the therapy regimen. Enter combination therapy, e.g., HiDAC plus DNR, or L-10, as one item using standard regimen and drug name abbreviations. Record any specific or unusual details regarding the therapy under Notes.

**Start Date**: Record the month, day and year the therapy started.

**Stop Date**: Record the month, day and year the therapy was stopped. For combination agent regimens, code the date on which all regimen agents were discontinued.

CML in Chronic Phase Onstudy

Disease Description

**Diagnosis**: The information used to report the patient’s leukemia should be taken from the most definitive pathology or bone marrow biopsy report available. All stages of CML require confirmation of the Philadelphia chromosome or variants of the \((9;22)\) translocation by cytogenetics or by FISH, or patients must test positive for BCR-ABL by RT-PCR. The subclassification for Chronic Myelogenous Leukemia (CML) is based on current information provided in the literature. Detailed diagnostic criteria are given in each protocol.
Chronic Phase is defined by the presence of all of the following criteria:

a. < 15% blasts in peripheral blood and bone marrow.

b. < 30% blasts plus promyelocytes in peripheral blood and bone marrow.

c. < 20% basophils in the peripheral blood

d. \( \geq 100 \times 10^9/L \ (\geq 100,000/mm^3) \) platelets.

e. No evidence of extramedullary leukemic involvement, with the exception of hepatosplenomegaly.

If the marrow is inaspirable ("dry tap"), then all requirements in a - e above must be met, except for the marrow requirements in a - b, and a bone marrow biopsy must be performed and read as consistent with chronic phase.

**Risk Category Based on Hasford Score and Sokal Score**


The risk category is determined from the Hasford Score as follows:

<table>
<thead>
<tr>
<th>Score</th>
<th>Risk Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score ( \leq 780 )</td>
<td>Low risk</td>
</tr>
<tr>
<td>780 &lt; Score ( \leq 1480 )</td>
<td>Intermediate risk</td>
</tr>
<tr>
<td>1,480 &lt; Score</td>
<td>High</td>
</tr>
</tbody>
</table>

The risk category is determined from the Sokal Score as follows:

<table>
<thead>
<tr>
<th>Score</th>
<th>Risk Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score &lt; 0.8</td>
<td>Low</td>
</tr>
<tr>
<td>0.8 &lt; score ( \leq 1.2 )</td>
<td>Intermediate</td>
</tr>
<tr>
<td>1.2 &lt; score</td>
<td>High</td>
</tr>
</tbody>
</table>

The advantage of using the Hasford score is that the Sokal score contains a subset of this data (age, spleen size, blast % and platelet count). Accordingly, collection of this more complete data set will allow both scores to be analyzed for prognostic information; however, whichever score was calculated at patient’s initial diagnosis will be collected.
Date of Initial Pathologic Diagnosis
This is the date of the first confirmation of Philadelphia chromosome or variants of the (9;22) translocation or testing positive for Bcr-Abl by RT-PCR.

BCR-ABL Results (International Scale)
If requested, provide the results from the most recent RT-PCR done prior to study registration at a local laboratory. The BCR-ABL results should be provided on the International Scale, and the sensitivity of the lab should also be reported on the International Scale.

Current Laboratory Values
This section records information regarding findings from the last peripheral blood studies and bone marrow biopsy/aspiration done prior to registration on protocol. The following fields must not be left blank, if values are not given in the report, please obtain them from the pathologist. If the value is 0 please record as 0. If marrow is a dry tap, please document in the Comments section.

- Blast percentages in peripheral blood and bone marrow.
- Percentage of promyelocytes in peripheral blood and bone marrow
- Basophil percentage in peripheral blood

Previously Untreated Acute Promyelocytic Leukemia Onstudy

Disease Description
**Diagnosis:** The information used to report the patient's leukemia should be taken from the most definitive pathology or bone marrow biopsy report available. APL; FAB M3 is defined by ≥ 20% neoplastic promyelocytes and the presence of t(15;17), PML-RARα-PML. The variant form of APL (FAB M3V) must be defined morphologically. See Section 4 of the treatment protocol for details.

Risk Classification
Risk categories are determined on the basis of pretreatment WBC and platelets counts as follows:

a. Low risk: WBC ≤ 10,000/µL and platelets > 40,000/µL
b. Intermediate risk: WBC ≤ 10,000/µL and platelets ≤40,000/µL
c. High risk: WBC > 10,000/µL

Current Laboratory Values
This section records information regarding findings from the last peripheral blood studies and bone marrow biopsy/aspiration done prior to registration on protocol.
MDS/CMML Onstudy

Disease Description

**Diagnosis:** The information used to report the patient's MDS/CMML should be taken from the most definitive pathology or bone marrow biopsy report available. This section provides two items for detailed classification for the patient's disease. The first item records the detailed disease subclassification. The second is a prognostic classification system. Detailed diagnostic criteria are given in each protocol.

**Dysplastic Features Cytogenetic Abnormalities:** The patient must meet one or more of the following criteria 1 - 4:

World Health Organization (WHO) Classifications:

- Refractory Anemia with excess blasts-1 (RAEB-1) – defined as having 5-9% blasts in the bone marrow.
- Refractory Anemia with excess blasts-2 (RAEB-2) – defined as having 10-19% myeloblasts in the bone marrow and/or 5-9% blasts in the blood.
- Chronic Myelomonocytic Leukemia – 1 (CMML-1) - defined as having <10% myeloblasts in the bone marrow and/or <5% blasts in the blood.
- Chronic Myelomonocytic Leukemia – 2 (CMML-2) – defined as having 10-19% myeloblasts in the bone marrow and/or 5-19% blasts in the blood.

**International Prognostic Scoring System (IPSS) and the Revised IPSS (R-IPSS) for MDS:** The total IPSS score and IPSS risk category are calculated as the sum of three individual scores based on the marrow blast percentage, the karyotype, and the number of cytopenias, as shown below. Questions regarding the calculation of the cytogenetics portion of the IPSS should be directed to the cytogenetics investigator.

Individual Components of Total Score

<table>
<thead>
<tr>
<th>Marrow Blast %</th>
<th>Individual Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5%</td>
<td>0</td>
</tr>
<tr>
<td>5 - 10%</td>
<td>0.5</td>
</tr>
<tr>
<td>11 - 20%</td>
<td>1.5</td>
</tr>
<tr>
<td>21 - 30 %</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**Karyotype**

<table>
<thead>
<tr>
<th>Karyotype</th>
<th>Individual Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0</td>
</tr>
<tr>
<td>-Y only</td>
<td>0</td>
</tr>
<tr>
<td>del (5q) only</td>
<td>0</td>
</tr>
</tbody>
</table>
Marrow Blast % | Individual Score  
---|---  
del (20q) only | 0  
Chromosome 7 anomalies with or without other abnormalities | 1.0  
≥ 3 abnormalities | 1.0  
Any other abnormalities than listed above | 0.5  

**Number of Cytopenias**  

| |  
|---|---  
0 - 1 | 0  
2 - 3 | 0.5  

* Cytopenias are defined as: hemoglobin < 10 g/dl, absolute neutrophil count < 1,500/µL, and platelet count < 100,000/µL  

1. **Total Score**  
Sum of 3 individual scores for marrow blast %, karyotype, and number of cytopenias.  

2. **IPSS Risk Category**  
Low if total score = 0  
Intermediate-1 if total score = 0.5 - 1.0  
Intermediate-2 if total score = 1.5 - 2.0  
High if total score = ≥2.5  

3. **Example:** If patient has 12% marrow blasts, no cytogenetic abnormalities, and two cytopenias, then total score is 1.5 + 0 + 0.5 = 2.0, and IPSS risk category is Intermediate -2.  

The IPSS-R is a recent revision of the IPSS that refines cytogenetic prognostic categorization and weights the prognostic score according to the severity of cytopenias in addition to the bone marrow blast percentage. The sum of the assigned points yields a prognostic score, which defines survival and risk of progression to AML. In addition to the clinical and pathologic variables included in the IPSS-R, point mutations in genes such as TP53, EZH2, ETV6, RUNX1, and ASXL1 have been shown to identify patients at risk for shortened survival or transformation to acute leukemia.  

**Transfusion History**  
This section records the number of red blood cell (RBC) units transfused during the 8 weeks prior to registration on study S1117, and the number of platelet transfusions during the same period. This information is required to establish baselines that are to evaluate whether the protocol treatment reduces transfusion requirements. All transfusions should be included, whether related to the current MDS or not (e.g., for post-surgery, anemia, etc.). Record the exact number of RBC units transfused and the exact number of platelet transfusions during the 8 weeks before
registration. Note that the cycle number for the pre-treatment Transfusion Log is 00. All others should be numbered to match the treatment cycle.

**Transfusion Log**

**Reporting Period**

This item refers to the protocol defined days after the patient is registered to the study. These dates should correspond with the treatment cycles for the patient.

*First and Last Dates of Reporting Period:* Record the month, day, and year of the starting and ending dates of this reporting period. This will not necessarily be the dates of the first and last transfusion within this reporting period.

**Transfusion Information**

If no red blood cells or platelets were transfused in this reporting period, check the "No" box. If any red blood cells or platelets were transfused in this reporting period, check the "Yes" box and complete the next section for all transfusions the patient received in this reporting period.

*Date of Transfusion(s):* Record the month, day and year in which the transfusion was given.

*Number of RBC Units Transfused:* This item records the exact number of units of red blood cells transfused for the date specified. All transfusions should be included, whether related to the current MDS or not (e.g., surgery, anemia, etc.).

*Number of Platelet Transfusions:* This item records the exact number of platelet transfusions given to the patient on the date specified. All transfusions should be included, whether related to the current MDS or not (e.g., surgery, anemia, etc.).

If an exact number of units transfused is not available, the best estimate is acceptable. If the log is filled completely and additional spaces are needed, summarize additional dates and types of transfusions in the Comments field.

**Cytogenetics and FISH**

Most Leukemia studies require cytogenetics analysis and some require FISH studies as well. Section 5 and Section 15 of the protocol will have specific information about the timing and any particular probes to be ordered. Just a few studies will require central review of the cytogenetics images. This will be specified in Section 12 of the protocol. If images are required, they must be obtained from the lab performing the analysis in .jpg, .gif/.tif or as PowerPoint slides. The images are uploaded to the patient’s Rave chart in one of the afore mentioned formats. SWOG Cytogenetics Reviewers may request additional images during the review process.

SWOG provides a Cytogenetics Lab Report form to assist with collecting data from the lab performing cytogenetic analysis. (see figure 1) This form can be obtained in .pdf format on the protocol abstract page on the SWOG.org or CTSU.org websites as part of the Master Forms Set.
Page 1 of the form includes instructions for the treating institution and also for the cytogenetics lab regarding what images to be sent (if any). Send a .pdf or paper copy of this form to the cytogenetics lab when you have registered a patient to a SWOG treatment study. Cytogenetics are usually ordered at initial diagnosis, so these tests may have been performed before the patient is referred for protocol treatment. So long as the tests were done within the time specified in Section 5, they should not need to be repeated.

Some studies do not use central review so images will not be required, but the lab report documenting the cytogenetics results will be needed at registration and possibly during follow-up tests. Section 14 of the protocol will specify what is required and when to submit. There are also cytogenetics forms included in the Baseline folder of the patient chart in Rave that collect certain data items. The Cytogenetics Lab Report form collects this data from the lab to assist the ORP with completion of the Rave form.
### SWOG S1312 CYTOGENETICS LAB REPORT FORM

**Patient Identifier** (L, F M) **Study Identifier** S1312 **Registration Step** 1

**Patient Initials**

**Registering Institution:** Please send this form along with the cytogenetics specimen to the cytogenetics lab of choice. When the results are received from the lab, submit the data from this form online and upload any available diagnostics karyograms, FISH images, and cytogenetics and FISH reports via MediData Rave (see Section 14.3).

**Cytogenetics Lab:** Please complete this form and submit along with the diagnostics karyograms (.ppt, .pptx, .gif or .jpg files), FISH images, and cytogenetics and FISH reports to the registering institution at the contact listed below. Note: FISH studies are optional.

- Karyogram/FISH images (submitted as follows):
  - If only normal cells are present: submit two karyograms of the normal.
  - If an abnormal clone is present: submit two karyograms of each abnormal clone.
  - If a mixture of normal and abnormal clonal cells is present: only two karyograms representing each abnormal clone need to be submitted.
  - If any non-clonal abnormalities (except random loss) are present: submit one karyogram of each non-clonal cell.

**Registering Institution Contact Name:**

**Email:**

Cytogenetic specimen submissions and this form are completed at post-study and after Cycle 1. All dates are MONTH, DAY, YEAR. Explain any blank dates or fields in a Comments section. Place an X in appropriate boxes.

### CYTOGENETICS ANALYSIS

**Date specimen collected:**

<table>
<thead>
<tr>
<th>Marrow</th>
<th>Blood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstimulated short-term culture (24-72 hours)</td>
<td>Unstimulated short-term culture (24-72 hours)</td>
</tr>
<tr>
<td>Direct preparation (metaphases)</td>
<td>Stimulated culture</td>
</tr>
<tr>
<td>Stimulated culture (metaphases)</td>
<td>Mitogen type</td>
</tr>
<tr>
<td>Mitogen type</td>
<td>Other culture method</td>
</tr>
<tr>
<td>Other culture method</td>
<td>Culture method and duration</td>
</tr>
</tbody>
</table>

**Total number of metaphases**

**Total number of abnormal metaphases**

**Are results based on at least 400-band level for banded analysis?** Yes ☐ No ☐ Unknown

**Karyotype description (ISCN 2009):**

**Were FISH studies performed?** Yes ☐ No ☐ Unknown

If Yes, FISH description: