Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult

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1 Age ≥ 18 years old
Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult

PATIENT PRESENTATION

Philadelphia negative precursor B (Pre B)
lymphoblastic leukemia/
lymphoma

CD19, CD10 (±),
CD20 (±), CD22 (±)

MPO (-)
TdT (+)

BCR::ABL1 (-)

TREATMENT

Age ≥ 60 years
• Consider clinical trial3:
  ○ Mini-HCVD plus inotuzumab ozogamicin4
    plus blinatumomab with or without rituximab5

Age 18 - 59 years
• Hyper-CVAD with or without rituximab6 or
  • Consider clinical trial3:
    ○ Hyper-CVAD plus inotuzumab ozogamicin plus
      blinatumomab with or without rituximab or
      ofatumumab6

ASSESSMENT OF RESPONSE

Complete remission?9

Yes
• Consolidation/maintenance
  • Blinatumomab or inotuzumab
    ozogamicin

No

SURVEILLANCE

POST-REMISSION THERAPY/MINIMAL RESIDUAL DISEASE

Yes

Salvage therapy clinical trial5,8
• Chimeric antigen receptor (CAR)
  T-cell therapy
• Blinatumomab with or without
  chemotherapy
• Inotuzumab ozogamicin
• Discuss Goal Concordant Care (GCC)
  with patient or if clinically indicated,
  with Patient Representative9

No

SURVEILLANCE

Note: Consider clinical trials as treatment options for eligible patients. Stem Cell Transplant (SCT) guidelines are not included with this algorithm. Leukemia patients should be referred and treated at a Comprehensive Cancer Center.

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1 See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
2 Consider MD Anderson approved biomarkers
3 See Leukemia Clinical Trials
4 Mini-HCVD (cyclophosphamide and dexamethasone at 50% dose reduction, no anthracycline, methotrexate at 75% dose reduction, cytarabine at 0.5 g/m² for 4 doses) plus inotuzumab ozogamicin
5 Rituximab if CD20 ≥ 20%
6 Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone); rituximab if CD20 ≥ 20%
7 Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone); ofatumumab if CD20 ≥ 1%
8 Failure after induction with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy
9 GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients, or if clinically indicated, the Patient Representative should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).

Age 18 - 59 years

● Hyper-CVAD with or without rituximab6 or
  ● Consider clinical trial3:
    ○ Hyper-CVAD plus inotuzumab ozogamicin plus blinatumomab with or without rituximab or ofatumumab6

Age ≥ 60 years

● Consider clinical trial3:
  ○ Mini-HCVD plus inotuzumab ozogamicin4
    plus blinatumomab with or without rituximab5

Philadelphia negative precursor B (Pre B)
lymphoblastic leukemia/
lymphoma

CD19, CD10 (±),
CD20 (±), CD22 (±)

MPO (-)
TdT (+)

BCR::ABL1 (-)

Department of Clinical Effectiveness V7

Approved by the Executive Committee of the Medical Staff on 05/16/2023

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Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult

**PATIENT PRESENTATION**

Philadelphia chromosome (Ph) positive acute lymphoblastic leukemia

- CD19, CD10 (+), CD20 (+), CD22 (+)
- CD13 (+), CD33 (+)
- CD117 (-)
- MPO (-)
- TdT (+)
- t(9;22)(q24;q11.2)
- BCR::ABL1 (+)

**TREATMENT**

**Age ≥ 60 years**
- Hyper-CVAD plus TKI with or without rituximab
- Consider clinical trial:
  - Hyper-CVAD plus ponatinib with or without rituximab
  - Blinatumomab plus ponatinib
  - Inotuzumab ozogamicin plus bosutinib
  - Mini-HCVD plus ponatinib plus blinatumomab

**Age 18 - 59 years**
- Hyper-CVAD plus dasatinib with or without rituximab
- Consider clinical trial:
  - Hyper-CVAD plus ponatinib with or without rituximab
  - Blinatumomab plus ponatinib
  - Inotuzumab ozogamicin plus bosutinib
  - Mini-HCVD plus ponatinib plus blinatumomab

**ASSESSMENT OF RESPONSE**

- Complete remission?

**POST-REMISSION THERAPY**

- Blinatumomab or
- Consolidation/maintenance or
- Allogeneic SCT

**Note:** Consider clinical trials as treatment options for eligible patients. Stem Cell Transplant (SCT) guidelines are not included with this algorithm. Leukemia patients should be referred and treated at a Comprehensive Cancer Center.

**TKI** = tyrosine kinase inhibitors

1. See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
2. Consider MD Anderson approved biomarkers
3. Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone); rituximab if CD20 ≥ 20%
4. See Leukemia Clinical Trials
5. Mini-HCVD (cyclophosphamide and dexamethasone at 50% dose reduction, no anthracycline, methotrexate at 75% dose reduction, cytarabine at 0.5 g/m² for 4 doses)
6. Failure after induction with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy
7. GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients, or if clinically indicated, the Patient Representative should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).

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**TREATMENT**

- Hyper-CVAD with rituximab
- Hyper-CVAD with ofatumumab or
- EPOCH with ofatumumab
- Consider clinical trial

**ASSESSMENT OF RESPONSE**

- Complete remission?
  - Yes
    - Consolidation
  - No
    - Salvage therapy:
      - EPOCH with ofatumumab or
      - Chimeric antigen receptor (CAR) T-cell therapy
    - Discuss Goal Concordant Care (GCC) with patient or if clinically indicated, with Patient Representative

**POST-REMISSION THERAPY**

- Surveillance

**PATIENT PRESENTATION**

- Burkitt or Burkitt-like leukemia/lymphoma
  - sIg (+), CD20 (+)
  - MPO (-)
  - TdT (-)
  - BCR::ABL1 (-)
  - c-myc (+)
  - t(8;14)(q24.1;q32)
  - t(8;22)(q24;q11)
  - t(2;8)(p12;q24)

**DISCLAIMER:**

- Clinical trials as treatment options for eligible patients. Stem Cell Transplant (SCT) guidelines are not included with this algorithm. Leukemia patients should be referred and treated at a Comprehensive Cancer Center.

**Note:** Ongoing reassessment of lifestyle risks should be a part of routine clinical practice.

1. See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
2. Consider MD Anderson approved biomarkers
3. Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone) plus rituximab
4. Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone) plus ofatumumab
5. EPOCH (etoposide, prednisone, vincristine, cyclophosphamide, doxorubicin) plus ofatumumab
6. See Leukemia Clinical Trials
7. Failure after induction with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy
8. GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients, or if clinically indicated, the Patient Representative should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).
Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult

Note: Consider clinical trials as treatment options for eligible patients. Stem Cell Transplant (SCT) guidelines are not included with this algorithm. Leukemia patients should be referred and treated at a Comprehensive Cancer Center.

 PATIENT PRESENTATION\(^1,2\)  TREATMENT  ASSESSMENT OF RESPONSE  POST-REMISSION THERAPY

Precursor T lymphoblastic leukemia/lymphoma

CD1(±), CD3 (±), CD5 (±),CD7 (±)  
CD4 (±), CD8 (±)  
MPO (-)  
TdT (+)  
BCR::ABL (-)

Age ≥ 60 years
  - Mini-HCVD\(^3\) with venetoclax
  - Hyper-CVAD\(^3\) with nelarabine with or without venetoclax

Age 18 - 59 years
  - Hyper-CVAD\(^3\) with nelarabine with or without venetoclax

Complete remission\(^4\):

Yes
  - Consolidation/maintenance
  - Radiation therapy if mediastinal disease
  
Surveillance

No
  - Consider clinical trial\(^6\)
  - Salvage therapy
  - Discuss Goal Concordant Care (GCC) with patient or if clinically indicated, with Patient Representative\(^2\)

Surveillance

\(^1\) See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice

\(^2\) Consider MD Anderson approved biomarkers

\(^3\) Mini-HCVD (cyclophosphamide and dexamethasone at 50% dose reduction, no anthracycline, methotrexate at 75% dose reduction, cytarabine at 0.5 g/m\(^2\) for 4 doses)

\(^4\) Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone)

\(^5\) Failure after induction with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy

\(^6\) See Leukemia Clinical Trials

GCC should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients, or if clinically indicated, the Patient Representative should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).

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A page from the document discussing Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult.

**SUGGESTED READINGS**


Continued on next page


Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult

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DEVELOPMENT CREDITS

This practice algorithm is based on majority expert opinion of the Leukemia Center Faculty at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

Core Development Team Leads
Alessandra Ferrajoli, MD (Leukemia)
Elias Jabbour, MD (Leukemia)
Hagop Kantarjian, MD (Leukemia)

Workgroup Members

<table>
<thead>
<tr>
<th>Yesid Alvarado, MD (Leukemia)</th>
<th>Steven Kornblau, MD (Leukemia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Andreeff, PhD, MD (Leukemia)</td>
<td>Lucia Masarova, MD (Leukemia)</td>
</tr>
<tr>
<td>Kapil Bhalla, MD (Leukemia)</td>
<td>Deborah McCue, PharmD (Pharmacy Clinical Programs)</td>
</tr>
<tr>
<td>Gautam Borthakur, MBBS (Leukemia)</td>
<td>Guillermo Montalban-Bravo, MD (Leukemia)</td>
</tr>
<tr>
<td>Prithviraj Bose, MD (Leukemia)</td>
<td>Maro Ohanian, DO (Leukemia)</td>
</tr>
<tr>
<td>Jan Burger, MD (Leukemia)</td>
<td>Naveen Pemmaraju, MD (Leukemia)</td>
</tr>
<tr>
<td>Naval Daver, MD (Leukemia)</td>
<td>Farhad Ravandi-Kashani, MD (Leukemia)</td>
</tr>
<tr>
<td>Courtney DiNardo, MD (Leukemia)</td>
<td>Koji Sasaki, MD (Leukemia)</td>
</tr>
<tr>
<td>Wendy Garcia, BS*</td>
<td>Nicholas Short, MD (Leukemia)</td>
</tr>
<tr>
<td>Guillermo Garcia-Manero, MD (Leukemia)</td>
<td>Koichi Takahashi, MD (Leukemia)</td>
</tr>
<tr>
<td>Ghayas Issa, MD (Leukemia)</td>
<td>Philip Thompson, MBBS (Leukemia)</td>
</tr>
<tr>
<td>Nitin Jain, MBBS (Leukemia)</td>
<td>Srdan Verstovsek, MD (Leukemia)</td>
</tr>
<tr>
<td>Tapan Kadia, MD (Leukemia)</td>
<td>Mary Lou Warren, DNP, APRN, CNS-CC*</td>
</tr>
<tr>
<td>Michael Keating, MD (Leukemia)</td>
<td>William Wierda, PhD, MD (Leukemia)</td>
</tr>
<tr>
<td>Marina Konopleva, PhD, MD (Leukemia)</td>
<td>Musa Yilmaz, MD (Leukemia)</td>
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* Clinical Effectiveness Development Team