Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult (Greater than or equal to 18 years old)

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PHILADELPHIA NEGATIVE PRECURSOR B (Pre B) LYMPHOBLASTIC LEUKEMIA/LYMPHOMA

CLASIFICATION

- Pre B ALL
  - CD19, CD10 (+), CD20 (+), CD22 (+)
  - MPO (-)
  - TdT (+)
  - BCR-ABL (-)

TREATMENT

- Age greater than or equal to 60 years
  - Consider clinical trial:
    - Hyper-CVD plus inotuzumab with or without rituximab

- Age greater than 30 years to 59 years
  - Hyper-CVAD with or without rituximab
  - Consider clinical trial:
    - Hyper-CVAD with ofatumumab
    - Hyper-CMAD with or without rituximab
    - Hyper-CVAD with blinatumomab

- Age less than or equal to 30 years
  - Augmented BFM or
  - Consider clinical trial:
    - Augmented BFM with or without ofatumumab
    - Hyper-CVAD with ofatumumab
    - Hyper-CVAD with blinatumomab

ASSESSMENT OF RESPONSE

- Complete remission?
  - Yes
    - Consolidation/Maintenance
    - Blinatumomab
  - No
    - Salvage therapy clinical trial
      - Mini-HCVD inotuzumab
      - Chimeric Antigen Receptor (CAR) T-cell therapies
      - Blinatumomab

POST-REMISSION THERAPY/MINIMAL RESIDUAL DISEASE

- Augmented BFM or
  - Consider clinical trial:
    - Augmented BFM with or without ofatumumab
    - Hyper-CVAD with ofatumumab
    - Hyper-CVAD with blinatumomab

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.

Age greater than or equal to 60 years
  - Consider clinical trial:
    - Hyper-CVD plus inotuzumab with or without rituximab

Age greater than 30 years to 59 years
  - Hyper-CVAD with or without rituximab
  - Consider clinical trial:
    - Hyper-CVAD with ofatumumab
    - Hyper-CMAD with or without rituximab
    - Hyper-CVAD with blinatumomab

Age less than or equal to 30 years
  - Augmented BFM or
  - Consider clinical trial:
    - Augmented BFM with or without ofatumumab
    - Hyper-CVAD with ofatumumab
    - Hyper-CVAD with blinatumomab

1 Hyper-CVD (hyper-fractionated cyclophosphamide, vincristine, dexamethasone) plus inotuzumab; rituximab if CD20 greater than or equal to 20%
2 Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone); rituximab if CD20 greater than or equal to 20%
3 Hyper-CMAD (hyper-fractionated cyclophosphamide, liposomal vincristine (Marqibo®), doxorubicin, dexamethasone); rituximab if CD20 greater than or equal to 10%
4 Augmented BFM, Berlin-Frankfurt-Munster (daunorubicin, vincristine, high dose prednisone, pegylated asparaginase); ofatumumab if CD20 greater than or equal to 1%
5 Leukemia Newsletter: http://www.mdanderson.org/leukemia (Available programs-treatment priorities)
6 Fail after INDUCTION with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy

Approved by the Executive Committee of the Medical Staff on 12/13/2016

Department of Clinical Effectiveness V4

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Acute Lymphoblastic Leukemia and Lymphoblastic Lymphoma (ALL) – Adult (Greater than or equal to 18 years old)

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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.

PHILADELPHIA CHROMOSOME (Ph) POSITIVE ACUTE LYMPHOBLASTIC LEUKEMIA

CLASSIFICATION

Ph+ ALL
- CD19, CD10 (±), CD20 (±), CD22 (±)
- CD13 (±), CD33 (±), CD117 (-)
- MPO (-), TdT (+)
- t(9;22)(q24;q11.2), BCR-ABL (+)

TREATMENT

Age greater than or equal to 60 years
- Hyper-CVAD plus dasatinib1 with or without rituximab or
- Consider clinical trial2:
  - Hyper-CVAD plus ponatinib with or without rituximab1 or
  - Hyper-CMAD plus dasatinib (or imatinib) with or without rituximab2
  - Blinatumomab plus ponatinib
  - Inotuzumab plus bosutinib

Age less than 60 years
- Hyper-CVAD plus dasatinib1 with or without rituximab or
- Consider clinical trial2:
  - Hyper-CVAD plus ponatinib with or without rituximab1 or
  - Hyper-CVAD plus dasatinib (or imatinib) with or without rituximab1

ASSESSMENT OF RESPONSE

Post-remission therapy

POST-REMISSION THERAPY

- Consolidation/Maintenance or Allogeneic SCT

Yes

Complete remission?

- Yes
- No3

Asses ABL mutation status
- Consider clinical trial2
- Salvage therapy:
  - Blinatumomab plus ponatinib
  - Hyper-CVAD plus ponatinib
  - Inotuzumab plus bosutinib
  - CAR T-cell therapies

1 Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone); rituximab if CD20 greater than or equal to 20%
2 Hyper-CMAD (hyper-fractionated cyclophosphamide, liposomal vincristine (Marqibo®), doxorubicin, dexamethasone); rituximab if CD20 greater than or equal to 10%
3 Fail after INDUCTION with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy

Department of Clinical Effectiveness V4
Approved by the Executive Committee of the Medical Staff on 12/13/2016
Burkitt, Burkitt-like ALL or HIV$^*$ Burkitt

- slg (+), CD20 (+)
- MPO (-)
- TdT (-)
- BCR-ABL (-)
- c-myc (+)
- t(8;14)(q24.1;q32)
- t(8;22)(q24;q11)
- t(2;8)(p12;q24)

Hyper-CVAD with rituximab$^1$
Consider clinical trial:
- Hyper-CVAD with ofatumumab
- EPOCH with ofatumumab$^1$

Complete remission?

Yes → Consolidation

No$^3$ →
- Consider clinical trial$^2$
- Salvage therapy:
  - EPOCH with ofatumumab$^1$
or
  - CAR T-cell therapies

$^1$ Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone) plus rituximab
$^2$ Leukemia Newsletter: http://www.mdanderson.org/leukemia (Available programs-treatment priorities)
$^3$ Fail after INDUCTION with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy
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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.

Precursor T Lymphoblastic Leukemia/Lymphoma

### Classification

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

### Treatment

#### Age greater than 30 years
- Hyper-CVAD with nelarabine

#### Age less than or equal to 30 years
- Augmented BFM or
- Hyper-CVAD with nelarabine

### Assessment of Response

- Complete remission?
  - Yes → Consolidation/Maintenance
  - XRT if mediastinal disease
  - No → Consider clinical trial

- Complete remission?
  - Yes → Consolidation/Maintenance
  - No → Consider clinical trial

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**XRT** = radiation therapy

1. Hyper-CVAD (hyper-fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone)
2. Augmented BFM, Berlin-Frankfurt-Munster (daunorubicin, vincristine, high dose prednisone, pegylated asparaginase)
4. Fail after INDUCTION with hyper-CVAD based regimen means no response after 2 cycles of chemotherapy
SUGGESTED READINGS


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This practice guideline 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 medical oncologists.

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