THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

Chronic Myelogenous Leukemia - Adult (Age ≥ 18 years)

Disclaimer: *This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.*

Notes: Consider Clinical Trials as treatment options for eligible patients. Leukemia patients should be referred and treated at a comprehensive cancer center.

INITIAL EVALUATION[1]

Chronic Myelogenous Leukemia (CML)

- Chronic Phase
- Accelerated Phase
- Blast Phase
  - Lymphoid
  - Myeloid

TREATMENT

Chronic Phase / Accelerated Phase

- 1st or 2nd generation TKI **or**
- Clinical trials[2]

Failure per 2020 European LeukemiaNet (ELN) criteria

- Bone marrow aspiration and cytogenetics[3]
- PCR in peripheral blood
- Mutation analysis[3]

→
- Alternate TKI[4] **or**
- Clinical trials[2] **or**
- Stem cell transplant

Minimal residual disease

→
- Continue TKI **or**
- Clinical trials[2]

Sustained (≥ 5 years) deep molecular response (DMR)[5]

→ Elective TKI discontinuation?

- Yes → PCR every 2 months for 6 months, then every 3 months for 12 months, then every 6 months thereafter
- No → PCR every 6 months

Blast Phase

Lymphoid →
- Mini-HCVD[6] plus blinatumomab and ponatinib **or**
- Hyper-CVAD[7] and TKI **or**
- Clinical trials[2]

Myeloid →
- Idarubicin and cytarabine plus TKI with or without venetoclax **or**
- Hypomethylating agent and TKI with or without venetoclax **or**
- Clinical trials[2]

→
- Stem cell transplant (SCT) after second chronic phase
- Discuss Goal Concordant Care (GCC) with patient or if clinically indicated, with Surrogate Decision-Maker (SDM)[8]

→
- Post SCT TKI
- Surveillance

SURVEILLANCE

- FISH every 3 months until complete cytogenic response
  - Bone marrow recommended when FISH is below 5% to confirm complete cytogenic response
- PCR (peripheral blood) every 3 months for 1 year (or until MMR), then every 6 months

[1] See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice
[2] See Leukemia Clinical Trials
[3] Consider MD Anderson approved biomarkers
[4] If T315I, consider ponatinib
[5] DMR is defined as MR4.0: BCR::ABL1 (IS) ≤ 0.01% or MR4.5: BCR::ABL1 (IS) ≤ 0.0032%
[6] 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)
[7] Hyper-CVAD = hyper-fractionated cyclophosphamide, vincristine, doxorubicin, and dexamethasone
[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 SDM 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).

FISH = fluorescence in situ hybridization
MMR = major molecular response
PCR = polymerase chain reaction
TKI = tyrosine kinase inhibitors

Department of Clinical Effectiveness V6
Approved by The Executive Committee of the Medical Staff 11/15/2022

SUGGESTED READINGS

Hochhaus, A., Baccarani, M., Silver, R. T., Schiffer, C., Apperley, J. F., Cervantes, F., . . . Hehlmann, R. (2020). European LeukemiaNet 2020 recommendations for treating chronic myeloid leukemia. *Leukemia, 34*(4), 966-984. https://doi.org/10.1038/s41375-020-0776-2

Jabbour, E., & Kantarjian, H. (2022). Chronic myeloid leukemia: 2022 update on diagnosis, Therapy and Monitoring. *American Journal of Hematology*. Advanced online publication. https://doi.org/10.1002/ajh.26642

MD Anderson Institutional Policy #CLN1202 - Advance Care Planning Policy
Advance Care Planning (ACP) Conversation Workflow (ATT1925)

National Comprehensive Cancer Network. (2022). *Chronic Myeloid Leukemia* (NCCN Guideline Version 3.2022). Retrieved from https://www.nccn.org/professionals/physician_gls/pdf/cml.pdf

Steegmann, J., Baccarani, M., Breccia, M., Casado, L., García-Gutiérrez, V., Hochhaus, A., . . . Clark, R. (2016). European LeukemiaNet recommendations for the management and avoidance of adverse events of treatment in chronic myeloid leukaemia. *Leukemia, 30*(8), 1648-1671. https://doi.org/10.1038/leu.2016.104

DEVELOPMENT CREDITS

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