Clinical suspicion for acute leukemia (peripheral blood vs bone marrow)

YES

NO

Order standard testing:
- LCMS / Leukemia/Lymphoma Immunophenotyping by Flow Cytometry, Varies (triage, acute panel)
- CHRBM / Chromosome Analysis, Hematologic Disorders, Bone Marrow
- Cytochemical stains as determined by reviewing pathologist

*If a complete flow cytometric analysis has been performed on peripheral blood (≥20% blasts), repeat only if protocol requirement or immunophenotype is unclear

Follow WHO criteria for further evaluation and subclassification

Diagnostic criteria met for acute myeloid leukemia (AML)

YES

NO

Acute leukemia, NOT AML, consider:
- B-cell ALL
- T-cell ALL
- Blastic plasmacytoid dendritic cell neoplasm

Possible acute promyelocytic leukemia (APL), follow Acute Promyelocytic Leukemia: Guideline to Diagnosis and Follow-up

Genetic testing for prognostic and therapeutic purposes

Question mixed-phenotype acute leukemia

Follow Acute Leukemias of Ambiguous Lineage Testing Algorithm

Order additional genetic testing
- FLT / FLT3 Mutation Analysis, Varies
- NGSHM / OncoHeme Next-Generation Sequencing for Myeloid Neoplasms, Varies (including: CEBPA, NPM1, IDH1, IDH2, etc)

Reflexive testing performed based on initial pathologic and genetic findings:
- AMLF / Acute Myeloid Leukemia (AML), FISH, Varies Only in the event of an unsuccessful/ambiguous cytogenetic result
- Monocytic differentiation: FISH for MLL (11q23)
- Morphologic suspicion of abnormal eosinophils: FISH for CBFB-MYH11 (inv[16])
- KITE / KIT Mutation Exons 8-11 and 17, Hematologic Neoplasms, Sequencing, Varies for core-binding factor acute myeloid leukemias, if NGSHM was not performed

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