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

**YES**

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

Diagnostic criteria met for acute myeloid leukemia (AML)

**YES**

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

**NO**

Genetic testing for prognostic and therapeutic purposes

Follow Acute Leukemias of Ambiguous Lineage Testing Algorithm

**YES**

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

**NO**

Question mixed-phenotype acute leukemia

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

Reflexive testing performed based on initial pathologic and genetic findings:
- In the event of an unsuccessful/ambiguous cytogenetic result the appropriate AML fluorescence in situ hybridization (FISH) is performed based on patient age: Adult (≥31 years), Pediatric (<30 years)
- AMLAF / Acute Myeloid Leukemia (AML), FISH, Adult, Varies
- AMLPF / Acute Myeloid Leukemia (AML), FISH, Pediatric, Varies
- Monocytic differentiation: FISH for MLL (11q23), order AMLMF / Acute Myeloid Leukemia (AML), Specified FISH, Varies and specific probe needed.
- Morphologic suspicion of abnormal eosinophils: FISH for CBFB-MYH11 (inv[16]), order AMLMF / Acute Myeloid Leukemia (AML), Specified FISH, Varies and specific probe needed.
- For core-binding factor AML, order KITE / KIT Mutation Exons 8-11 and 17, Hematologic Neoplasms, Sequencing, Varies, if NGSHM was not performed

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