Acute Myeloid Leukemia: Testing Algorithm

1. Clinical suspicion for acute leukemia (peripheral blood vs bone marrow)
   - YES
   - 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
   - Diagnostic criteria met for acute myeloid leukemia (AML)
     - YES
     - Possible acute promyelocytic leukemia (APL), follow Acute Promyelocytic Leukemia: Guideline to Diagnosis and Follow-up
     - Genetic testing for prognostic and therapeutic purposes
       - Reflexive testing performed based on initial pathologic and genetic findings:
         - AMLF / Acute Myeloid Leukemia (AML), FISH, Varies
         - 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
     - Question mixed-phenotype acute leukemia
       - Follow Acute Leukemias of Ambiguous Lineage Testing Algorithm
   - NO
   - Acute leukemia, NOT AML, consider:
     - B-cell ALL
     - T-cell ALL
     - Blastic plasmacytoid dendritic cell neoplasm
     - Follow WHO criteria for further evaluation and subclassification

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