Acute Leukemias of Ambiguous Lineage
Testing Algorithm

Undifferentiated phenotype

Myeloid lineage is not isolated:
CD19+, CD10+, surface CD3+, uniform CD2+, or uniform CD7+

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

Possible mixed phenotype acute leukemia

Myeloperoxidase/terminal deoxynucleotidyl transferase testing by IHC, flow cytometry, etc

Order:
- AML FISH, panel test based on age:
  - Adult (≥31 years)
    - AMLAF / Acute Myeloid Leukemia (AML), FISH, Adult, Varies
  - Pediatric (≤30 years)
    - AMLPF / Acute Myeloid Leukemia (AML), FISH, Pediatric, Varies
- NGSHM / OncoHeme Next-Generation Sequencing for Myeloid Neoplasms, Varies
- T-cell flow panel
  Consider IHC for CD3

Order:
- BALLM / B-Cell Lymphoblastic Leukemia Monitoring, Minimal Residual Disease Detection, Flow Cytometry, Bone Marrow
- AML FISH, panel test based on age:
  - Adult (≥31 years)
    - AMLAF / Acute Myeloid Leukemia (AML), FISH, Adult, Varies
  - Pediatric (≤30 years)
    - AMLPF / Acute Myeloid Leukemia (AML), FISH, Pediatric, Varies
- NGSHM / OncoHeme Next-Generation Sequencing for Myeloid Neoplasms, Varies
Consider IHC for CD10, CD19, CD22, CD79a, Pax5

Diagnostic criteria has not been met for acute myeloid leukemia (AML)

B-cell/myeloid phenotype per World Health Organization (WHO) criteria

Mixed-phenotype acute leukemia, B-cell/myeloid, not otherwise specified

Negative fluorescence in situ hybridization (FISH) results

Positive FISH results

Mixed-phenotype acute leukemia with t(9;22)(q34.1;q11.2); BCR-ABL1
Mixed-phenotype acute leukemia with t(v;11q23.3); KMT2A-rearranged

Acute undifferentiated leukemia

T-cell/myeloid phenotype per WHO criteria

Order:
- Mixed-phenotype acute leukemia with t(9;22)(q34.1;q11.2); BCR-ABL1
- Mixed-phenotype acute leukemia with t(v;11q23.3); KMT2A-rearranged

Negative FISH results

Mixed-phenotype acute leukemia, B-cell/myeloid, not otherwise specified