Lessons from LK2101: Optimizing MRD Data Capture for AML in CIBMTR

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Conclusions from LK2101 Analysis

- **MRD remains a consistent risk factor**, but its prognostic performance may vary across centers
- Variability likely reflects **differences in assay implementation, sensitivity, and reporting**
- Findings highlight the **limited prognostic utility** of registry-reported MFC-MRD data
- **Standardized MRD assessment** protocols across transplant centers are urgently needed
- Data interpretation was **challenged by limited quality parameters** available in the registry

Current status of MFC-MRD in CIBMTR

AML Pre-Infusion Data (CRF (Form 2010 R4))

58. Was the recipient MRD negative following this line of therapy? ☐ Yes ☐ No

79. Was flow cytometry performed?
- ☐ Yes →
- ☐ No
- ☐ Unknown

Specify tissue and results at last evaluation prior to the start of the preparative regimen / infusion:

80. Blood
- ☐ Yes →
- ☐ No

81. Date sample collected: __ __ __ __ / __ __ / __ __ (YYYY / MM / DD)

82. Was disease detected?
- ☐ yes →
- ☐ No

83. Specify percent disease detected: ___ ___ • ___ ___ ___ %

84. Bone marrow
- ☐ Yes →
- ☐ No

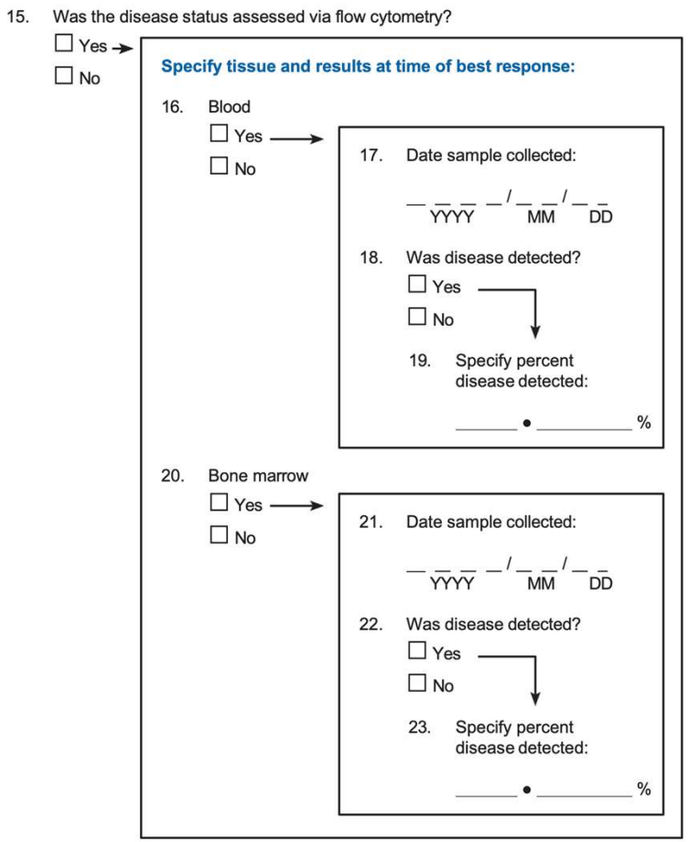
85. Date sample collected: __ __ __ __ / __ __ / __ __ (YYYY / MM / DD)

86. Was disease detected?
- ☐ yes →
- ☐ No

87. Specify percent disease detected: ___ ___ • ___ ___ ___ %

Current status of MFC-MRD in CIBMTR

AML Post-Infusion Data (CRF (Form 2110 R4))


15. Was the disease status assessed via flow cytometry?
☐ Yes →
☐ No

Specify tissue and results at time of best response:

16. Blood
☐ Yes →
☐ No

17. Date sample collected:
__ __ __ __ / __ __ / __ __
YYYY MM DD

18. Was disease detected?
☐ Yes →
☐ No

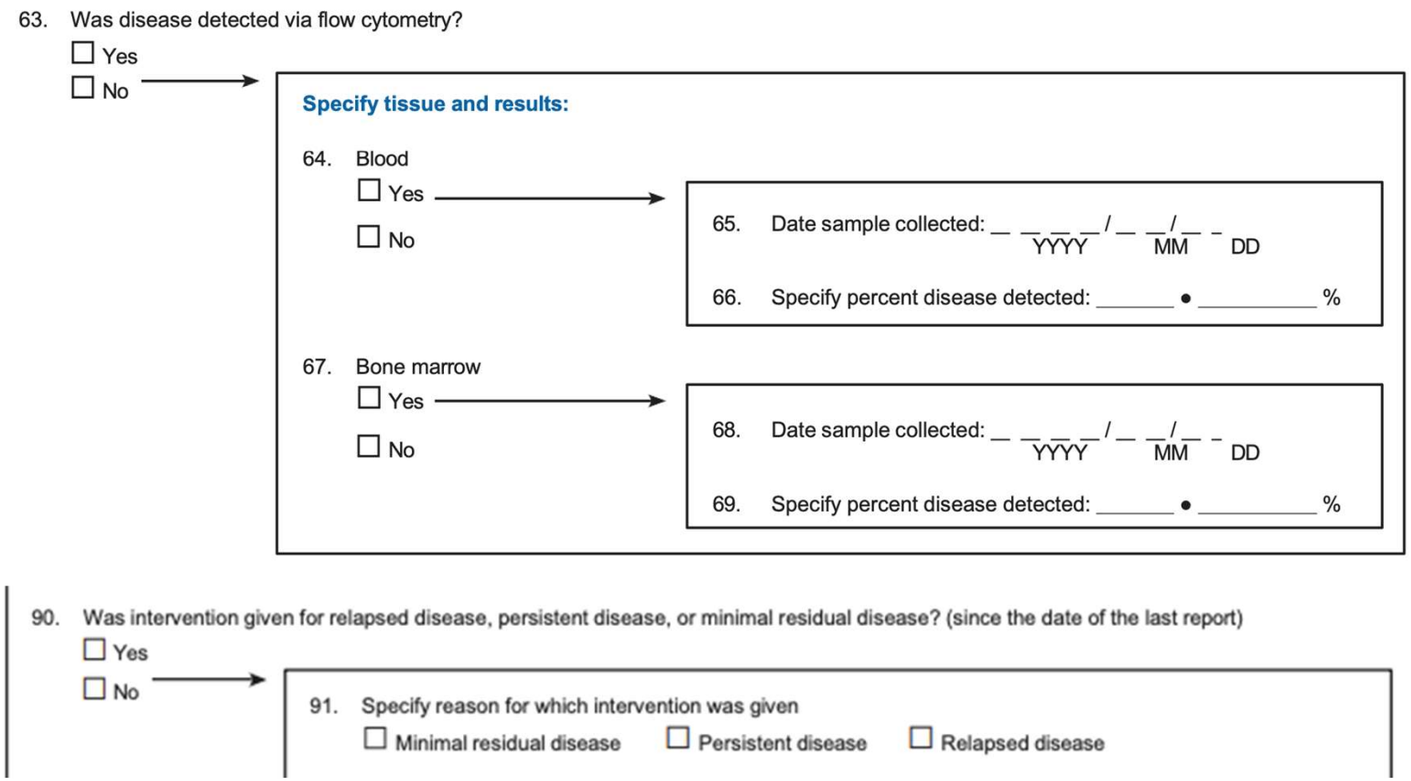
19. Specify percent disease detected:
_____ • _____ %

20. Bone marrow
☐ Yes →
☐ No

21. Date sample collected:
__ __ __ __ / __ __ / __ __
YYYY MM DD

22. Was disease detected?
☐ Yes →
☐ No

23. Specify percent disease detected:
_____ • _____ %


63. Was disease detected via flow cytometry?
☐ Yes
☐ No →

Specify tissue and results:

64. Blood
☐ Yes →
☐ No

65. Date sample collected: __ __ __ __ / __ __ / __ __
YYYY MM DD

66. Specify percent disease detected: _____ • _____ %

67. Bone marrow
☐ Yes →
☐ No

68. Date sample collected: __ __ __ __ / __ __ / __ __
YYYY MM DD

69. Specify percent disease detected: _____ • _____ %

90. Was intervention given for relapsed disease, persistent disease, or minimal residual disease? (since the date of the last report)
☐ Yes
☐ No →

91. Specify reason for which intervention was given
☐ Minimal residual disease ☐ Persistent disease ☐ Relapsed disease

Current status of molecular-MRD in CIBMTR

AML Post-Infusion Data (CRF (Form 2110 R4))

51. Were tests for molecular markers performed (and positive for disease) (e.g. PCR, NGS)?

- ☐ Yes
- ☐ No → 52. Date sample collected: __ __ __ __ / __ __ / __ _ (YYYY MM DD)

  Specify molecular markers identified since the date of last report:

  53. CEBPA
  - ☐ Positive → 54. Specify CEBPA mutation
    - ☐ Biallelic (homozygous)
    - ☐ Monoallelic (heterozygous)
    - ☐ Unknown
  - ☐ Negative
  - ☐ Not done

55.	FLT3 – TKD **(point mutations in D835 or deletions of codon I836)**	☐ Positive	☐ Negative	☐ Not done
56.	FLT3 – ITD mutation	☐ Positive	☐ Negative	☐ Not done
57.	IDH1	☐ Positive	☐ Negative	☐ Not done
58.	IDH2	☐ Positive	☐ Negative	☐ Not done
59.	KIT	☐ Positive	☐ Negative	☐ Not done
60.	NPM1	☐ Positive	☐ Negative	☐ Not done

  61. Other molecular marker →
  - ☐ Positive → 62. Specify other molecular marker: _____
  - ☐ Negative
  - ☐ Not done

  Copy and complete questions 62-63 to report multiple molecular markers

- ☐ Unknown

Current need

- **Expand MRD data fields** → enable deeper interpretation and predictive value
- **Ensure minimum quality standards** → sampling, assay performance, and reporting
- **Harmonize assessments across centers** → standardized methods and definitions
- **Maintain feasibility for data providers →** ensure forms remain practical and easy to complete

Possibilities for MFC-MRD expansion

- **Sample quality**
  - *Anticoagulant used*
  - *Viability (%)*
  - Total events acquired
  - *Assessment of hemodilution*

85. Date sample collected: _ _ _ _ / _ _ / _ _

86. Was disease detected?

☐ Yes – ***Go to question 87***

☐ No

87. Specify percent disease detected: _ _._ _ _ %

88. Specify the total white blood cell (WBC) events acquired: _ _ _._ _ _ _

Possibilities for MFC-MRD expansion

- **Assay characteristics**
  - Number of markers used
  - Reported sensitivity
  - Gating strategy

Assay characteristics:

89. Specify the number of markers used to assess MFC: ___

90: Specify the reported sensitivity of the assay used to assess MFC: __.__ %

91. Specify the gating strategy used:

☐ LAIP (based on the LAIP found at diagnosis)

☐ Different from Normal (DfN)

☐ Combination of LAIP and DfN

☐ Unknown

Possibilities for molecular MRD expansion

- **Expand with more markers**
  - Include all ELN risk defining markers

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- **Expand with more markers**
  - Include all ELN risk defining markers
- **Separate qPCR from NGS**

Next-generation sequencing

Was measurable residual disease detected by NGS at last evaluation prior to the start of the preparative regimen / infusion?

Possibilities for molecular MRD expansion

- **Expand with more markers**
  - Include all ELN risk defining markers
- **Separate qPCR from NGS**
- **Ask for assay performance**
  - Include LOD question

Assay performance:

18. Lower limit of detection: __.__ %

Possibilities for molecular MRD expansion

- **Expand with more markers**
  - Include all ELN risk defining markers
- **Separate qPCR from NGS**
- **Ask for assay performance**
  - Include LOD question
- **Have a dedicated section for Invivoscribe NGS testing**

Was measurable residual disease detected by **Invivoscribe** NGS **at last evaluation prior to the start of the preparative regimen / infusion**?

Specify molecular markers identified at time of best response:

1. FLT3-ITD

☐ Positive
☐ Negative
☐ Not done

6. NPM1

☐ Positive
☐ Negative
☐ Not done