3rd edition

Unmet challenges in high risk hematological malignancies: from benchside to clinical practice

Turin, September 21-22, 2023

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ROLE OF TRANSPLANTATION IN HIGH RISK MDS

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Disclosures of Giulia Rivoli

Company name	Research support	Employee	Consultant	Stockholder	Speakers bureau	Advisory board	Other

NOTHING TO DISCLOSE

ROLE OF TRANSPLANTATION IN HIGH RISK MDS

TABLE 5 Summary of publications comparing outcomes of allo-HSCT versus other types of treatments

Reference	Method	Results
Platzbecker et al.[29]	Retrospective cohort study in high risk MDS age 60–70 years • Allo-HSCT ($n = 103$) • AZA ($n = 75$)	2-year EFS 37% (95% CI 28–48) and 14% (95% CI 7–27), respectively; $p = .04$ 2-year OS 39% (95% CI 30–50) and 23% (95% CI 14–40), respectively; $p = .007$
Robin et al.[30]	Prospective cohort study in high risk MDS age 50–70 years • HLA match donor ($n = 112$) • No donor ($n = 50$)	4-year OS 37% (95% CI 28–48) and 15% (95% CI 6–39), respectively; $p = .02$
Nakamura et al.[31]	Biologic assignment trial in intermediate-2 or high-risk MDS by IPSS age 50–75 years • RIC allo-HSCT ($n = 260$) • HMA/BSC ($n = 124$)	3-year OS 47.9% (95% CI 41.3–54.1) and 26.6% (95% CI 18.4–35.6), respectively; $p = .0001$
Kröger et al.[32]	Prospective phase II study in intermediate-2 or high-risk MDS by IPSS or intermediate I with high-risk cytogenetics age 55–70 years • RIC allo-HSCT ($n = 81$) • AZA ($n = 27$)	3-year EFS 34% (95% CI 22–47) and 0%, respectively; $p < .001$ 3-year OS 50% (95% CI 39–61) and 32% (95% CI 14–52), respectively; $p = .12$

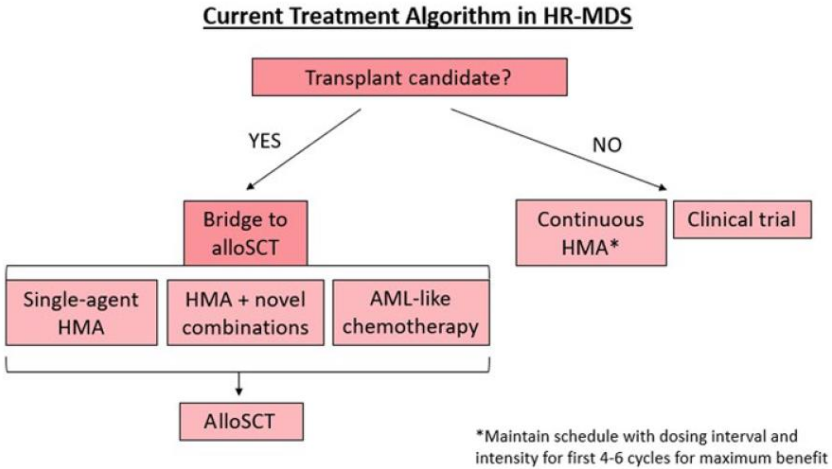


Figure 2. Treatment algorithm for HR-MDS based on current FDA-approved regimens.

HR currently defined according to R-IPSS in clinical practice (> 3.5 points)

1. Vittayawacharin P, Kongtim P, Ciurea SO. Allogeneic stem cell transplantation for patients with myelodysplastic syndromes. Am J Hematol. 2023 Feb;98(2):322-337. doi: 10.1002/ajh.26763. Epub 2022 Oct 28. PMID: 3625134
2. New investigational combinations for higher- risk MDS Kristin L. Koenig and Uma Borate, http://ashpublications.org/hematology/article- pdf/2022/1/368/2021729/368

Transplantation and Cellular Therapy 29 (2023) 71–81

Transplantation and Cellular Therapy

journal homepage: www.tctjournal.org

Guideline

Hematopoietic Cell Transplantation in the Management of Myelodysplastic Syndrome: An Evidence-Based Review from the American Society for Transplantation and Cellular Therapy Committee on Practice Guidelines

- ✓ What is the role of allogeneic HCT in MDS?
- ✓ How should chromosomal anomalies and somatic mutations be considered in the context of HCT?
- ✓ When should patients with MDS be referred for HCT evaluation?
- ✓ What is the role of pretransplant systemic therapy for MDS?
- ✓ Conditioning intensity, alternative donors and post-transplant issues

Zachariah DeFilipp, Stefan O. Ciureaet al Hematopoietic Cell Transplantation in the Management of Myelodysplastic Syndrome: An Evidence-Based Review from the American Society for Transplantation and Cellular Therapy Committee on Practice Guidelines, Transplantation and Cellular Therapy, Volume 29, Issue 2, 2023, Pages 71-81, ISSN 2666-6367, https://doi.org/10.1016/j.jtct.2022.11.014.

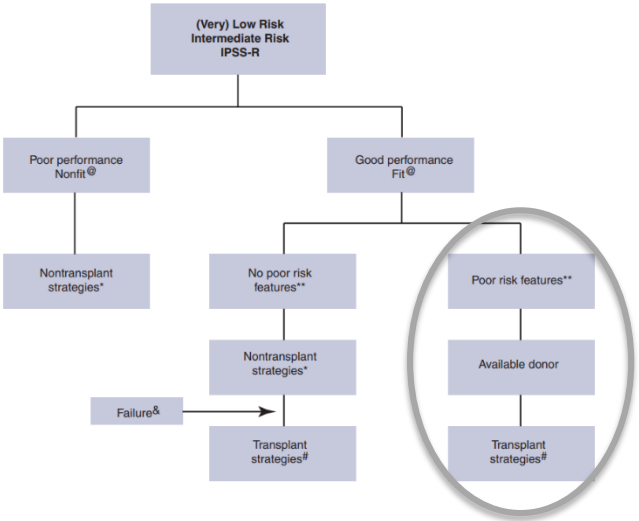
WHO TO TRANSPLANT?

- ✓ ***What is the role of allogeneic HCT in MDS?***
- ✓ ***How should chromosomal anomalies and somatic mutations be considered in the context of HCT?***

WHEN TO TRANSPLANT?

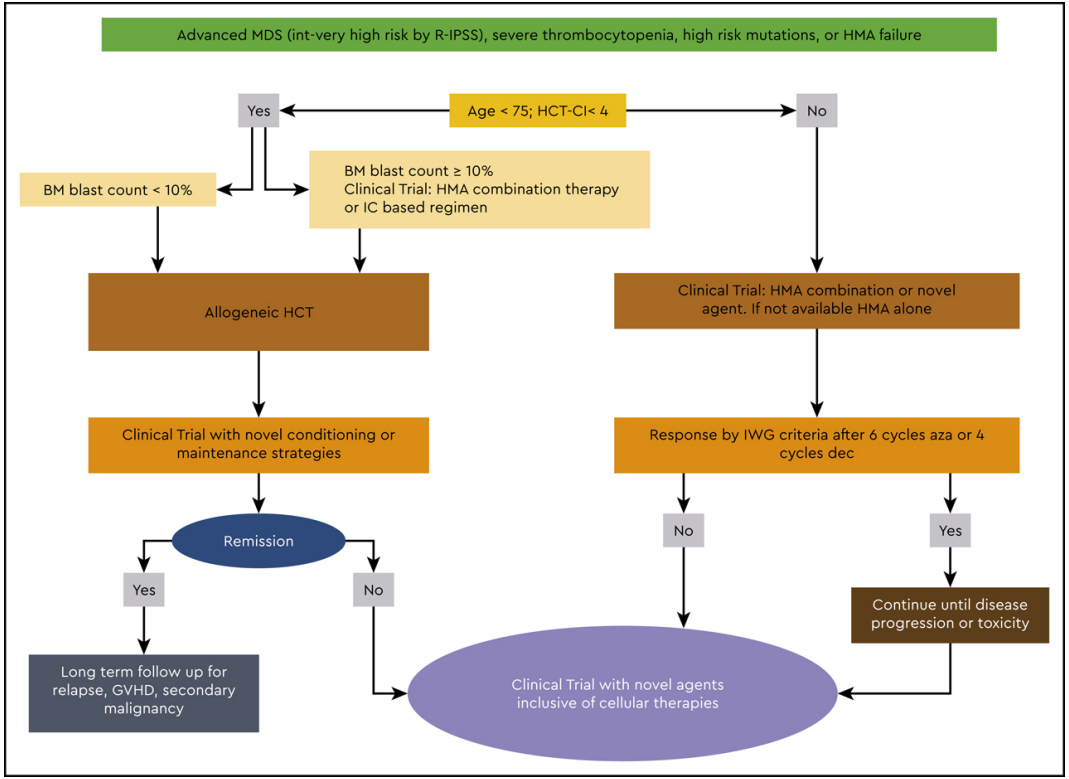
HOW TO TRANSPLANT?

PROGNOSTIC STRATIFICATION AND ALLO-SCT IN LOW-RISK MDS: IS LOW R-IPSS RISK ALWAYS LOW?



- Molecular assessment, M-IPSS
- Clinical evaluation: response/non-response to available therapies, transfusion requirements, kinetics and complications related to cytopenias, comorbidities, quality of life → dynamic outcome indicators [2]

EBMT Handbook 2020, https://doi.org/10.1007/978-3-030-02278-5
2. De Witte T et al, Novel dynamic outcome indicators and clinical endpoints in myelodysplastic syndrome; the European LeukemiaNet MDS Registry and MDS-RIGHT project perspective. Haematologica 2020;105(11):2516-2523; https://doi.org/10.3324/haematol.2020.266817.

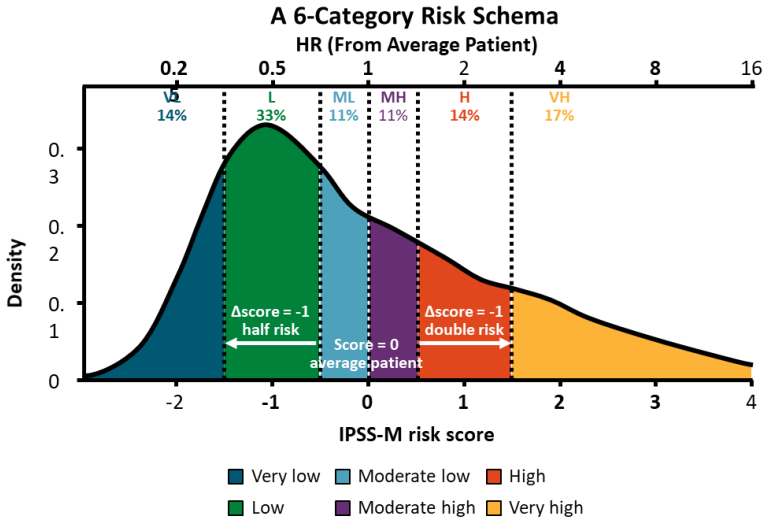


Bart L. Scott, Existing agents, novel agents, or transplantation for high-risk MDS, Hematology Am Soc Hematol Educ Program, 2020,

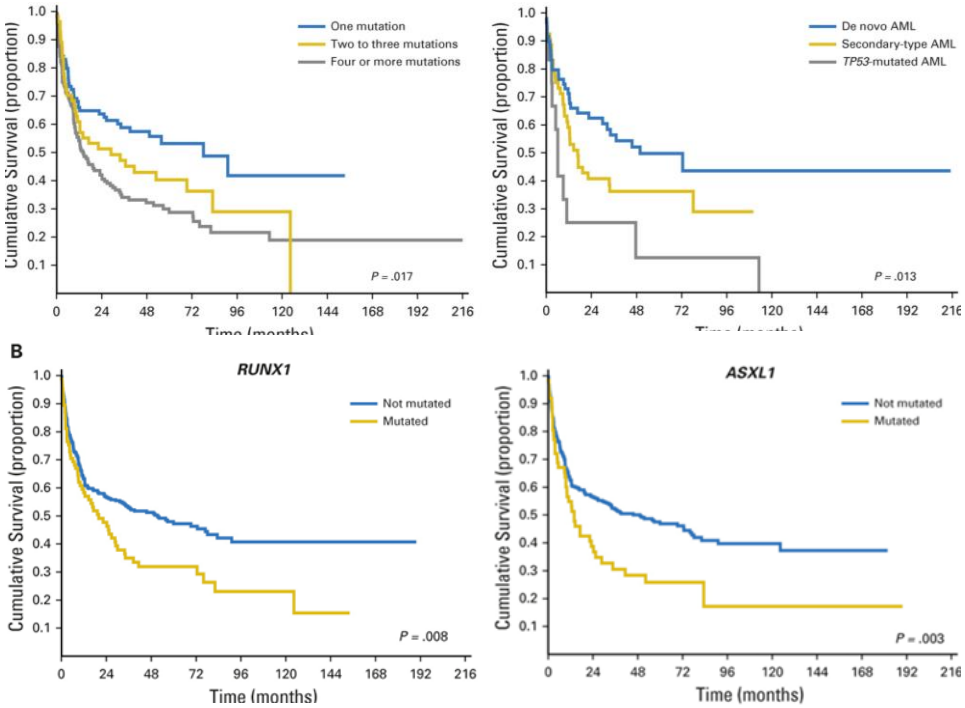
DEVELOPMENT OF IPSS-M

After adjusting for age, sex, MDS type (primary vs therapy related), and IPSS-R raw score, multiple genes were associated with adverse outcomes including LFS (14 genes), OS (16 genes), and AML transformation (15 genes)[1]

46% of patients were re-stratified from IPSS-R: 74% upstaged / 26% down-staged



Bernard et al, Published June 12, 2022 NEJM Evid 2022; 1 (7),
DOI:https://doi.org/10.1056/EVIDoa2200008

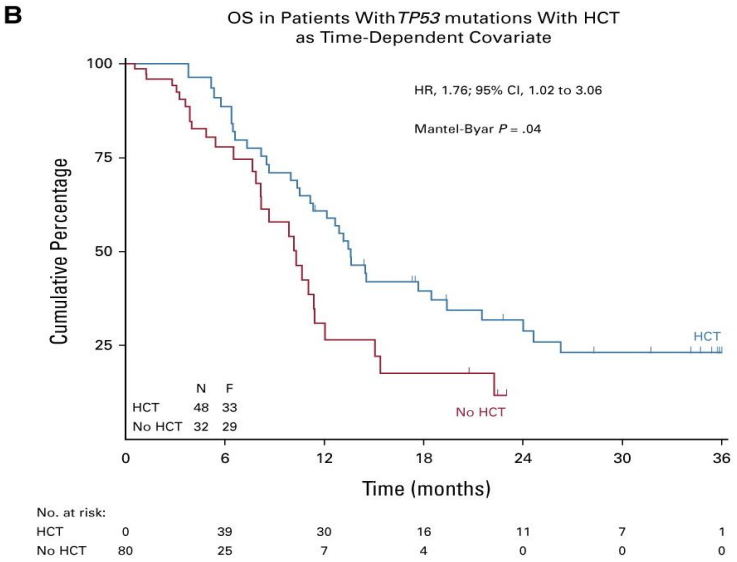


MDS TREATED WITH HSCT: IMPACT OF DRIVER SOMATIC MUTATIONS ON SURVIVAL OUTCOMES

- **ASXL1 // RUNX1 // TP53**: independent predictors of OS and relapse after HSCT in MDS and AML post-MDS
- The **number of somatic mutations** is associated with survival outcome

Published in: Matteo G. Della Porta; et al; Journal of Clinical Oncology 2016 343627-3637.
DOI: 10.1200/JCO.2016.67.3616

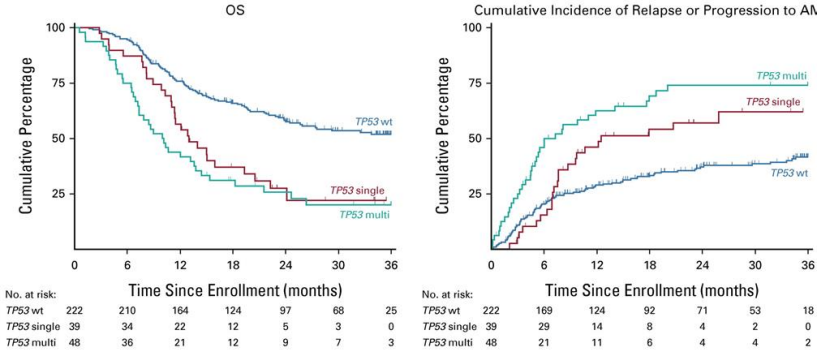
GENETIC ANALYSIS OF THE BMT CTN 1102 STUDY



TP53 mut patients undergoing HCT had improved OS compared with non-HCT treatment (OS at 3 years: 23% ± 7% v 11% ± 7%; P = .04)
HR of 3.89; 95% CI, 1.87 to 8.12; P < .001

OS in TP53 mut patients was worse compared with TP53 wt patients (21% ± 5% [SE] v 52% ± 4% at 3 years; P < .001).

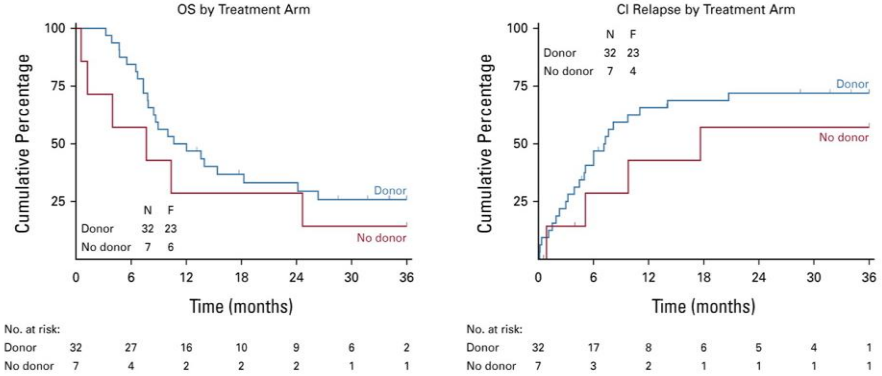
No significant OS difference between TP53single versus TP53multihit (22% ± 8% v 20% ± 6% at 3 years; P = .31).



Jurjen Versluis; et al; Journal of Clinical Oncology Ahead of Print DOI: 10.1200/JCO.23.00866

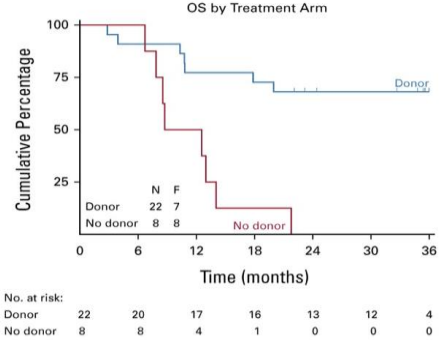
GENETIC ANALYSIS OF THE BMT CTN 1102 STUDY

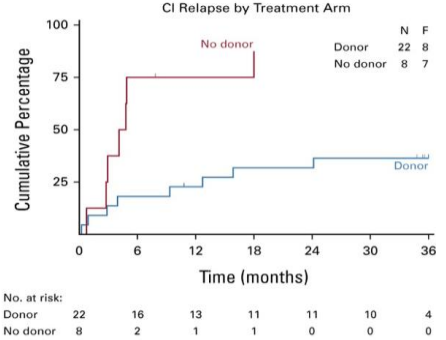
C **IPSS-M Very High Risk—*TP53* Mutation Present**



OS among patients with molecular IPSS (IPSS-M) very high risk without a TP53 mutation was significantly improved if they had a donor (68% ± 10% v 0% ± 12% at 3 years; P = .001).

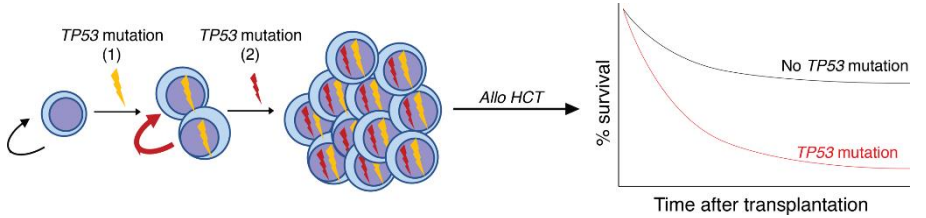
D **IPSS-M Very High Risk—*TP53* Mutation Absent**





Jurjen Versluis; et al; Journal of Clinical Oncology Ahead of Print DOI: 10.1200/JCO.23.00866

TRANSPLANT FOR TP53-MUTATED MDS AND AML: BECAUSE WE CAN OR BECAUSE WE SHOULD?



Disease subtype → Treatment → **Response**

- TP53 allelic state
- Co-occurring mutations
- Immunophenotype

- Depth of remission
- Molecular MRD status
- Extent of prior therapy

Allogeneic HCT

Conditioning

- Modify intensity
- Novel drug combinations

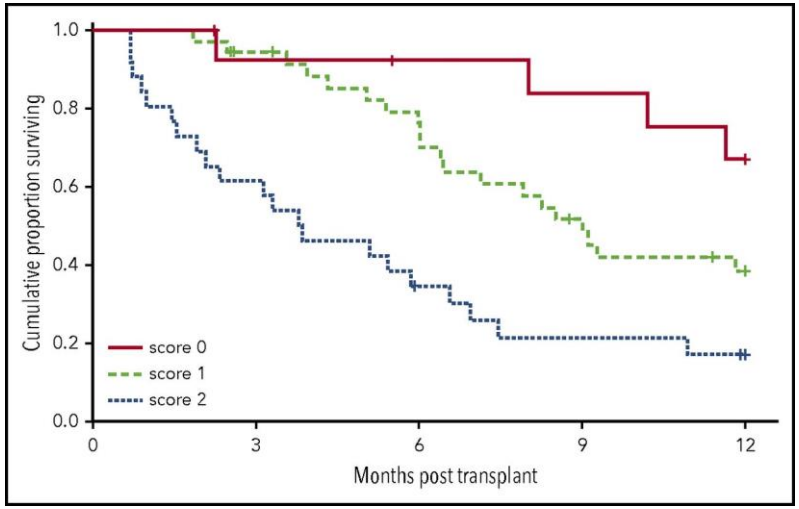
- Donor selection: HLA disparity vs. early availability

Post-HCT phase

- Maintenance treatment
- Early tapering of immunosuppression
- Prophylactic or preemptive DLI

Jurjen Versluis,R. Coleman Lindsley, Transplant for TP53-mutated MDS and AML: because we can or because we should?, Hematology Am Soc Hematol Educ Program, 2022,

TRANSPLANT FOR TP53-MUTATED MDS



Retrospective series of 84 TP53 mut patients (55 SCT)

3 independent factors associated with worse OS: HCT-CI > 4 // KPS ≤ 80% // disease not in CR1/2

1 year OS according to risk score (0, 1 and ≥ 2). 67% - 39% - 17%

Stefan O. Ciurea,Abhishek Chilkulwar,Rima M. Saliba,Julianne Chen,Gabriela Rondon,Keyur P. Patel,Haitham Khogeer,Abdul R. Shah,Brion V. Randolph,Jorge M. Ramos Perez,Uday Popat,Chitra M. Hosing,Qaiser Bashir,Rohtesh Mehta,Gheath Al-Atrash,Jin Im,Issa F. Khouri,Partow Kebriaei,Richard E. Champlin, Prognostic factors influencing survival after allogeneic transplantation for AML/MDS patients with TP53 mutations, Blood, 2018, Figure 1

WHO TO TRANSPLANT?

WHEN TO TRANSPLANT?

✓ ***When should patients with MDS be referred for HSCT evaluation?***

Should allogeneic HCT routinely be offered early for advanced (int-2/high) de novo MDS?	Yes	A	1++

✓ ***What is the role of pretransplant systemic therapy for MDS?***

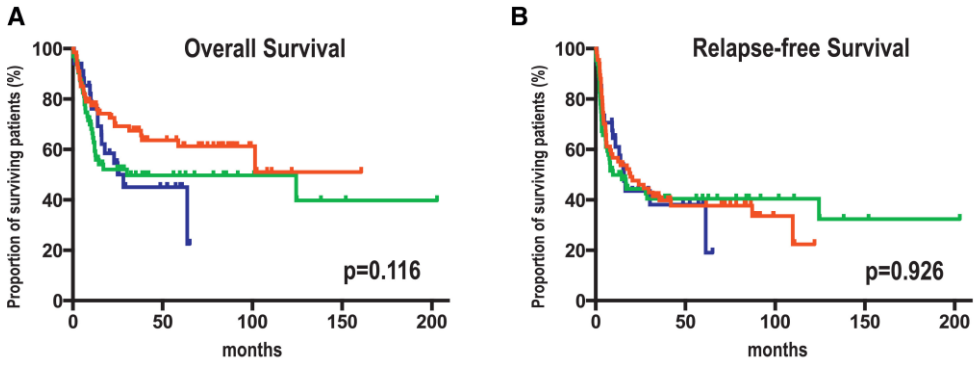
Should patients with MDS receive disease-directed therapy prior to HCT?	Unclear	C	2++

HOW TO TRANSPLANT?

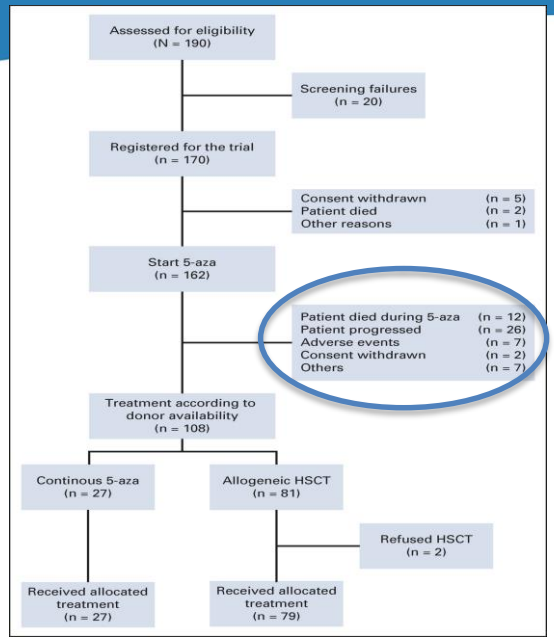
Zachariah DeFilipp, Stefan O. Ciurea et al Hematopoietic Cell Transplantation in the Management of Myelodysplastic Syndrome: An Evidence-Based Review from the American Society for Transplantation and Cellular Therapy Committee on Practice Guidelines, Transplantation and Cellular Therapy, Volume 29, Issue 2, 2023, Pages 71-81, ISSN 2666-6367, https://doi.org/10.1016/j.jtct.2022.11.014

COMPARISON BETWEEN UPFRONT SCT AND DIFFERENT PRETRANSPLANT CYTOREDUCTIVE TREATMENT APPROACHES IN PATIENTS WITH HR-MDS AND S-AML

- 126 pts with excess blast MDS // retrospective analysis
- 77 (41%) upfront SCT
- 98 (59%) received preSCT cytoreductive treatment (IC, n = 64; HMAs, n = 34)
- An upfront transplant strategy is at least not inferior to pretransplant cytoreduction



Thomas Schroeder et al Comparison between Upfront Transplantation and different Pretransplant Cytoreductive Treatment Approaches in Patients with High-Risk Myelodysplastic Syndrome and Secondary Acute Myelogenous Leukemia, Biology of Blood and Marrow Transplantation, Volume 25, Issue 8, 2019, Pages 1550-1559, ISSN 1083-8791, https://doi.org/10.1016/j.bbmt.2019.03.011.



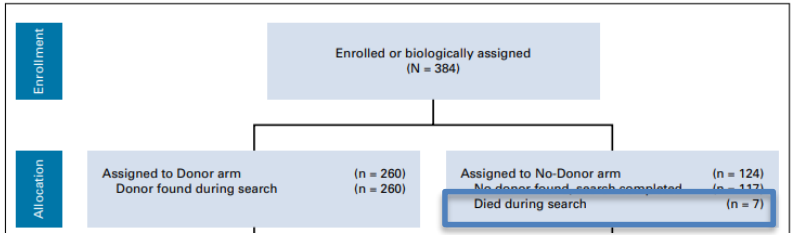
Comparison Between 5-Azacytidine Treatment and Allogeneic Stem-Cell Transplantation in Elderly Patients With Advanced MDS According to Donor Availability (VidazaAllo Study)

Nicolaus Kröger, MD[1]; Katja Sockel, MD[2]; Christine Wolschke, MD[1]; Wolfgang Bethge, MD[3]; Richard F. Schlenk, MD[4,5]; Dominik Wolf, MD[6,7,8]; Michael Stadler, MD[9]; Guido Kobbe, MD[10]; Gerald Wulf, MD[11]; Gesine Bug, MD[12]; Kerstin Schäfer-Eckart, MD[13]; Christof Scheid, MD[14]; Florian Nolte, MD[15]; Jan Krönke, MD[16]; Matthias Stelljes, MD[17]; Dietrich Beelen, MD[18]; Marion Heinzelmann[1]; Detlef Haase, MD[1,]; Hannes Buchner, PhD[19]; Gabriele Bleckert, PhD[19]; Aristoteles Giagounidis, MD[20]; Uwe Platzbecker, MD[2,21]; on behalf of the German MDS Study Group and the German Cooperative Transplant Study Group

original reports

Biologic Assignment Trial of Reduced-Intensity Hematopoietic Cell Transplantation Based on Donor Availability in Patients 50-75 Years of Age With Advanced Myelodysplastic Syndrome

Ryotaro Nakamura, MD[1]; Wael Saber, MD, MS[2]; Michael J. Martens, PhD[2]; Alyssa Ramirez, BS[3]; Bart Scott, MD[4]; Betul Oran, MD[5]; Eric Leifer, PhD[6]; Roni Tamari, MD[7]; Asmita Mishra, MD[8]; Richard T. Maziarz, MD[9]; Joseph McGuirk, DO[10]; Peter Westervelt, MD, PhD[11]; Sumithira Vasu, MBBS[12]; Mrinal Patnaik, MBBS[13]; Rammurti Kamble, MD[14]; Stephen J. Forman, MD[1]; Mikkael A. Sekeres, MD, MS[15]; Frederick Appelbaum, MD[4]; Adam Mendizabal, PhD[3]; Brent Logan, PhD[2]; Mary Horowitz, MD, MS[2]; and Corey Cutler, MD, MPH[16]; on behalf of the Blood and Marrow Transplant Clinical Trials Network



44 patients in the donor group (16.7%) did not undergo HSCT:

- Disease progression
- Comorbidities
- Subject preference
- Donor or insurance issues
- death

1. Nicolaus Kröger; et al; Journal of Clinical Oncology 2021 393318-3327. DOI: 10.1200/JCO.20.02724 Copyright © 2021 American Society of Clinical Oncology
2 Ryotaro Nakamura; et al Journal of Clinical Oncology 2021 393328-3339. DOI: 10.1200/JCO.20.03380 Copyright © 2021 American Society of Clinical Oncology
3. Robin M, et al, HLA-matched allogeneic stem cell transplantation improves outcome of higher risk myelodysplastic syndrome A prospective study on behalf of SFGM-TC and GFM. Leukemia. 2015 Jul;29(7):1496-501. doi: 10.1038/leu.2015.37. Epub 2015 Feb 13. PMID: 25676424

Leukemia (2015) 29, 1496–1501

www.nature.com/leu

ORIGINAL ARTICLE

HLA-matched allogeneic stem cell transplantation improves outcome of higher risk myelodysplastic syndrome A prospective study on behalf of SFGM-TC and GFM

M Robin[1,2,3], R Porcher[4,5], L Adès[6], E Raffoux[7], M Michallet[8], S François[9], J-Y Cahn[10], A Delmer[11], E Wattel[8], S Vigouroux[12], J-O Bay[13], J Cornillon[14], A Huynh[15], S Nguyen[16], M-T Rubio[17], L Vincent[18], N Maillard[19], A Charbonnier[20], RP de Latour[1,2,3], O Reman[21], H Dombret[2,6], P Fenaux[2,6] and G Socié[1,2,3]

31 patients in the donor group (31/112, 28%) did not receive HSCT because of:

- progressive disease with BM blasts > 10% despite treatment (n=16)
- acquisition of a comormidity contraindicating HSCT (n=9)
- death during IC or HMA in responders or before assessment (n=4)
- patient refusal/social reasons (n=2)

Robin M, Porcher R, Adès L, Raffoux E, Michallet M, François S, Cahn JY, Delmer A, Wattel E, Vigouroux S, Bay JO, Cornillon J, Huynh A, Nguyen S, Rubio MT, Vincent L, Maillard N, Charbonnier A, de Latour RP, Reman O, Dombret H, Fenaux P, Socié G. HLA-matched allogeneic stem cell transplantation improves outcome of higher risk myelodysplastic syndrome A prospective study on behalf of SFGM-TC and GFM. Leukemia. 2015 Jul;29(7):1496-501. doi: 10.1038/leu.2015.37. Epub 2015 Feb 13. PMID: 25676424.

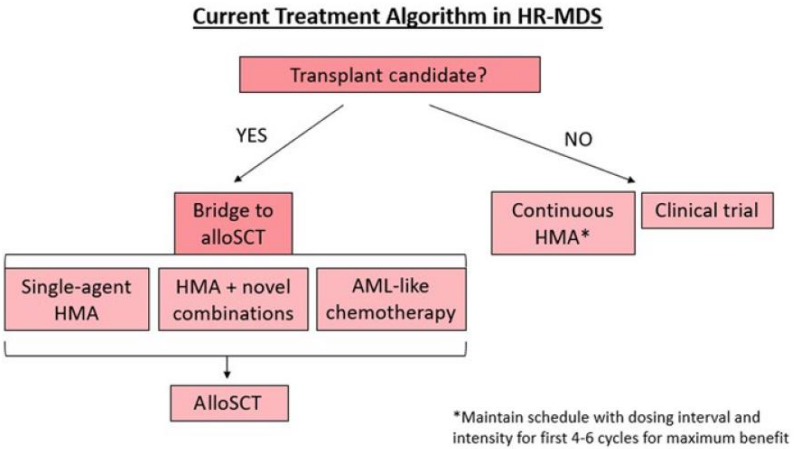


Figure 2. Treatment algorithm for HR-MDS based on current FDA-approved regimens.

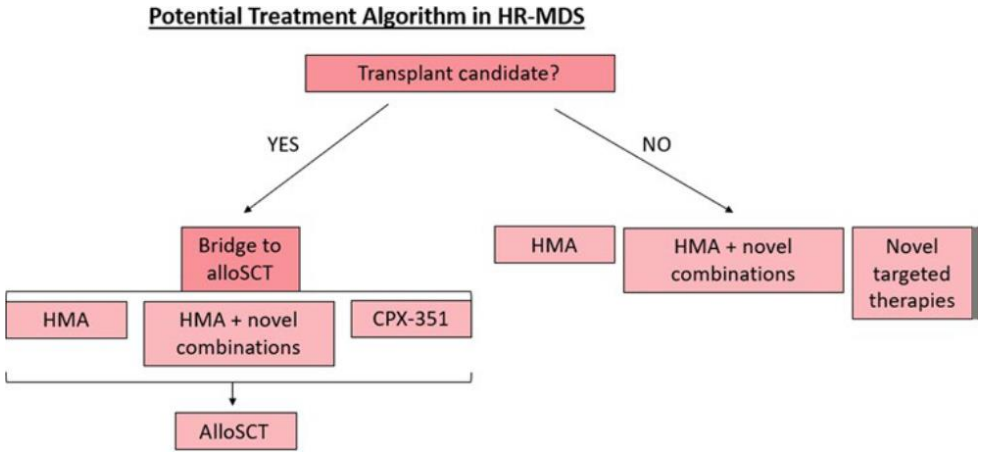
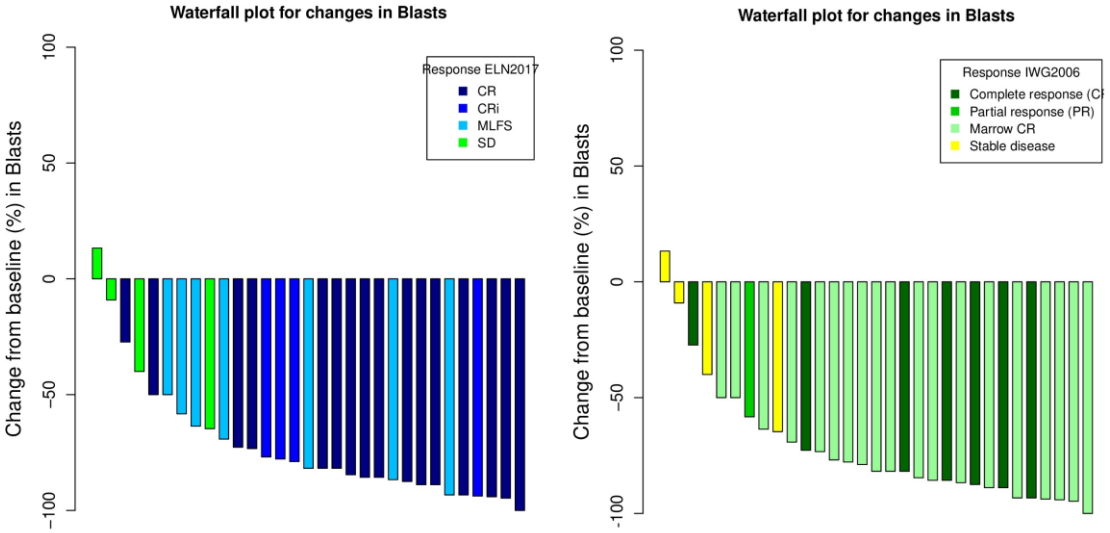


Figure 3. Treatment algorithm for HR-MDS based on therapies under development.

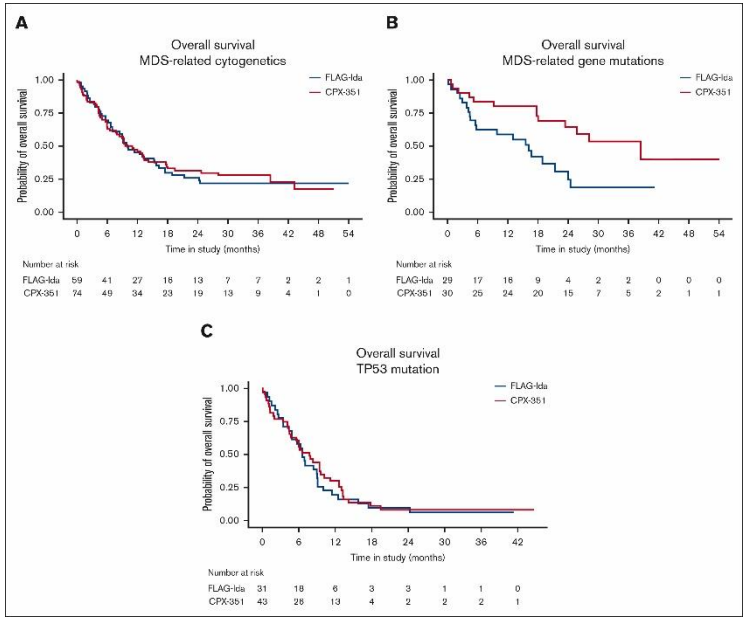
CPX-351 IN HR-MDS



- 31 treatment-naive adult patients with HR-MDS >70 years old.
- CR 23%, marrow CR (mCR) 45%, HI 6%
- 89% of patients with BM blasts >10% achieved <5% after induction.
- 22 patients went on to receive an alloSCT, with 5 allo-SCTs still planned.

Pierre Peterlin,Pascal Turlure,Patrice Chevallier,Marie-Pierre Gourin,Pierre-Yves Dumas,Sylvain Thepot,Anna Berceanu,Sophie Park,Marie Anne Hospital,Thomas Cluzeau,Jose Miguel Torregrosa Diaz,Louis Devron,Sylvie Chevret,Marie C Bene,Yannick Le Bris,Rosa Sapena,Fatiha Chermat,Sophie Dimicoli-Salazar,Pierre Fenaux, CPX 351 As First Line Treatment in Higher Risk MDS. a Phase II Trial By the GFM, Blood, 2021, Figure 1

A RANDOMIZED COMPARISON OF CPX-351 AND FLAG-IDA IN ADVERSE KARYOTYPE AML AND HIGH-RISK MDS: THE UK NCRI AML19 TRIAL



- ✓ 189 patients: 30% high-risk MDS.
- ✓ No difference in OS (13.3 months vs 11.4 months) or EFS in multivariable analysis.

- ✓ In high-risk AML and MDS, CPX-351 did not improve response or survival compared with FLAG-Ida but produced better relapse-free survival.

- ✓ In the exploratory subgroup of patients defined by the presence of mutations in MDS-related genes, CPX-351 improved OS.

Jad Othman, et al; on behalf of the UK National Cancer Research Institute Acute Myeloid Leukaemia Working Group , A randomized comparison of CPX-351 and FLAG-Ida in adverse karyotype AML and high-risk MDS: the UK NCRI AML19 trial. Blood Adv 2023; 7 (16): 4539–4549. doi: https://doi.org/10.1182/bloodadvances.2023010276

AZACITIDINE PLUS VENETOCLAX IN PATIENTS WITH HIGH-RISK MDS: PHASE 1-2 STUDY

Phase I/II study

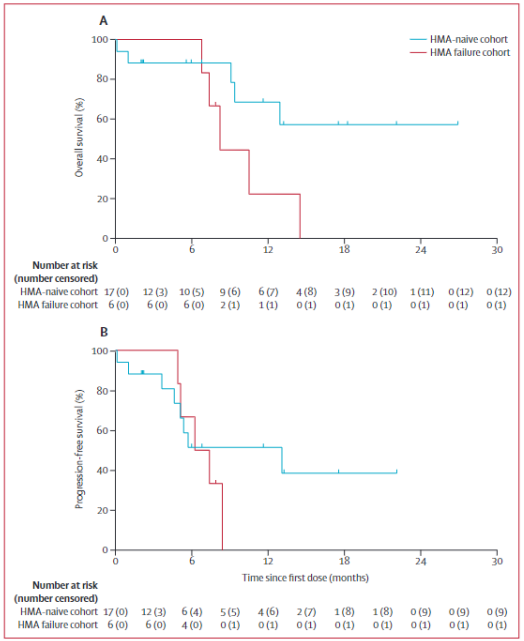
23 patients enrolled in phase I (74% HMAs naïve, 26% post-HMAs failure)

Median FU 13.2 months

Dose/duration reduction in azacytidine and venetoclax administration

ORR 87%; median TTR 1 cycle

Median OS not reached in HMAs-naïve cohort vs 8.3 months in HMAs failure
Median PFS 13.1 mo vs 6.2 mo



Bazinet A, et al Azacitidine plus venetoclax in patients with high-risk myelodysplastic syndromes or chronic myelomonocytic leukaemia: phase 1 results of a single-centre, dose-escalation, dose-expansion, phase 1-2 study. Lancet Haematol. 2022 Oct;9(10):e756-e765. doi: 10.1016/S2352-3026(22)00216-2. Epub 2022 Sep 2. PMID: 36063832.

WHO TO TRANSPLANT?

WHEN TO TRANSPLANT?

HOW TO TRANSPLANT?

✓ ***Conditioning intensity, alternative donors and post-transplant issues***

Conditioning regimen			
Are RIC regimens an acceptable alternative for adults considered unfit for MAC regimens?	Yes	A	1++
Should MAC be the preferred conditioning intensity in fit patients?	Unclear	A	1++
Alternative donors			
Can haploidentical relatives, MMUDs, and umbilical cord blood be considered as alternative donor options?	Yes	C	2+

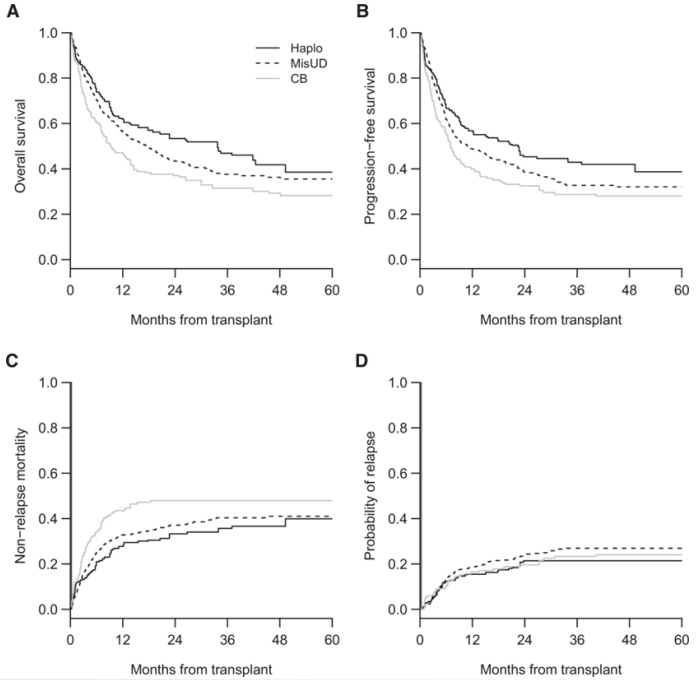
Consideration	Recommendation	Grade of Recommendation	Highest Level of Evidence
Should patients with MDS receive maintenance therapy after HCT??	Unclear	B	1+
Is there a preferred treatment for relapsed disease after HCT?	No	D	2-

2. Zachariah DeFilipp, Stefan O. Ciurea et al Hematopoietic Cell Transplantation in the Management of Myelodysplastic Syndrome: An Evidence-Based Review from the American Society for Transplantation and Cellular Therapy Committee on Practice Guidelines, Transplantation and Cellular Therapy, Volume 29, Issue 2, 2023, Pages 71-81, ISSN 2666-6367, https://doi.org/10.1016/j.jtct.2022.11.014

HLA-MISMATCHED DONORS IN PATIENTS WITH MDS: AN EBMT REGISTRY ANALYSIS

- ✓ PFS better after haplo (versus mismatched unrelated, P = .056; vs CB, P = .003)
- ✓ OS tended to be superior after haplo (vs mismatched unrelated, P = .082; versus CB, P = .002)
- ✓ NRM not significantly different between haplo and mismatched unrelated donors
- ✓ Relapse risk not influenced by the type of donor

….patients with MDS from the EBMT registry receiving hematopoietic stem cell transplantation from a haplo donor have significantly better outcome than those receiving hematopoietic stem cell transplantation from a CB donor and at least similar or better outcome than with a mismatched unrelated donor….



Biology of Blood and Marrow Transplantation 2019 25114-120DOI: (10.1016/j.bbmt.2018.08.026)

REGULAR ARTICLE

blood advances

A phase 3 randomized study of 5-azacitidine maintenance vs observation after transplant in high-risk AML and MDS patients

Betül Oran,[1] Marcos de Lima,[2] Guillermo Garcia-Manero,[3] Peter F. Thall,[4] Ruitao Lin,[4] Uday Popat,[1] Amin M. Alousi,[1] Chitra Hosing,[1] Sergio Giralt,[5] Gabriela Rondon,[1] Glenda Woodworth,[1] and Richard E. Champlin[1]

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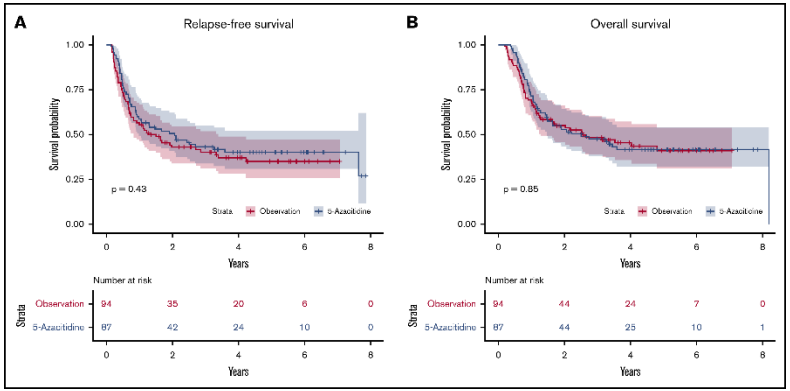

The use of subcutaneous 5-azacitidine as posttransplant maintenance strategy was not associated with improved RFS (A) and OS (B) compared with observation arm.

Betül Oran, Marcos de Lima,Guillermo Garcia-Manero,Peter F. Thall,Ruitao Lin,Uday Popat,Amin M. Alousi,Chitra Hosing,Sergio Giralt,Gabriela Rondon,Glenda Woodworth,Richard E. Champlin, A phase 3 randomized study of 5-azacitidine maintenance vs observation after transplant in high-risk AML and MDS patients, Blood Adv, 2020, Figure 2.

POST-HSCT MAINTENANCE NEW PERSPECTIVES

Measurable residual disease-guided treatment with azacitidine to prevent haematological relapse in patients with myelodysplastic syndrome and acute myeloid leukaemia (RELAZA2): an open-label, multicentre, phase 2 trial

Uwe Platzbecker*, Jan Moritz Middeke*, Katja Sockel*, Regina Herbst*, Dominik Wolf*, Claudia D Baldus*, Uta Oelschlägel*, Anke Mütherig*, Lars Fransecky*, Richard Noppeney*, Gesine Bug*, Katharina S Götze, Alwin Krämer*, Tilmann Bochtler*, Matthias Stelljes*, Christoph Groth*, Antje Schubert*, Marika Mende*, Friedrich Stölzel*, Christin Borkmann*, Anne Sophie Kubasch*, Malte von Bonin*, Hubert Serve*, Mathias Hänel*, Ulrich Dührsen*, Johannes Schetelig*, Christoph Röllig*, Michael Kramer*, Gerhard Ehninger*, Martin Bornhäuser*, Christian Thiede*

original reports

Eprenetapopt Plus Azacitidine After Allogeneic Hematopoietic Stem-Cell Transplantation for *TP53*-Mutant Acute Myeloid Leukemia and Myelodysplastic Syndromes

Asmita Mishra, MD[1]; Roni Tamari, MD[2]; Amy E. DeZern, MD[3]; Michael T. Byrne, DO[4]; Mahasweta Gooptu, MD[5]; Yi-Bin Chen, MD[6]; H. Joachim Deeg, MD[7]; David Sallman, MD[8]; Phillip Gallacher, BSc[9]; Anders Wennborg, MD, PhD[9]; Denice K. Hickman, BSN, RN[9] Eyal C. Attar, MD[9]; and Hugo F. Fernandez, MD[10]

REGULAR ARTICLE

blood advances

Enasidenib as maintenance following allogeneic hematopoietic cell transplantation for *IDH2*-mutated myeloid malignancies

Amir T. Fathi,[1] Haesook T. Kim,[2] Robert J. Soiffer,[3] Mark J. Levis,[4] Shuli Li,[2] Annette S. Kim,[5] Alice S. Mims,[6] Zachariah DeFilipp,[1] Areej El-Jawahri,[1] Steven L. McAfee,[1] Andrew M. Brunner,[1] Rupa Narayan,[1] Laura W. Knight,[1] Devon Kelley,[1] AJ S. Bottoms,[1] Lindsey H. Perry,[1] Jonathan L. Wahl,[3] Jennifer Brock,[3] Elayne Breton,[4] Vincent T. Ho,[3] and Yi-Bin Chen[1]

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1.Eprenetapopt plus azacitidine after allogeneic hematopoietic stem-cell transplantation for TP53-mutant acute myeloid leukemia and myelodysplastic syndromes. J Clin Oncol (2022;40:3985-3993)
2.AT Fathi, HT Kim, RJ Soiffer, et al. Enasidenib as maintenance following allogeneic hematopoietic cell transplantation for IDH2-mutated myeloid malignancies Blood Adv, 6 (2022), pp. 5857-5865

3.U Platzbecker, JM Middeke, K Sockel, et al.Measurable residual disease-guided treatment with azacitidine to prevent haematological relapse in patients with myelodysplastic syndrome and acute myeloid leukaemia (RELAZA2): an open-label, multicentre, phase 2 trial Lancet Oncol, 19 (2018), pp. 1668-1679

3rd edition

Unmet challenges in high risk hematological malignancies: from benchside to clinical practice

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