

Supplemental Table 1: Specific treatment approaches in first-line treatment of MPN-AP/BP

Therapy Type	Specific Regimen (n)
Intensive Chemo (n=65)	7+3 based (23) FLAG based (17) FLAG + Idarubicin (15) CPX-351 (5) HIDAC + Mitoxantrone (3) MEC (1) CLAG-M (1)
DNMTi based (n=65)	DNMTi monotherapy (43) DNMTi + JAK inhibitor (19) DNMTi + IDH inhibitor (3)
DNMTi + VEN based (n=54)	DNMTi + VEN (50) DNMTi + VEN + JAK inhibitor (3) DNMTi + VEN + investigational agent (1)
Other (n=6)	JAK inhibitor monotherapy (2) Cladribine + LDAC + JAK inhibitor (2) LDAC + VEN (1) JAK inhibitor + investigational agent (1)

FLAG = fludarabine + cytarabine + granulocyte colony stimulating factor; HIDAC = high-dose cytarabine; MEC = mitoxantrone + etoposide + cytarabine; CLAG-M = cladribine + cytarabine + granulocyte colony stimulating factor + mitoxantrone; DNMTi = DNA methyltransferase inhibitor; JAK = Janus kinase; IDH = isocitrate dehydrogenase; VEN = venetoclax; LDAC = low-dose cytarabine

Supplemental Table 2: Specific treatment approaches in second-line and beyond treatment of MPN-AP/BP

Therapy Type	Specific Regimen (n)
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DNMTi + VEN based (n=38)	DNMTi + VEN (34) DNMTi + VEN + investigational agent (3) DNMTi + VEN + IDH inhibitor (1)
Intensive Chemo (n=37)	HIDAC + Mitoxantrone (6) FLAG based (6) 7+3 based (5) CLAG-M based (5) MEC based (4) HIDAC (3) CPX-351 (2) Mitoxantrone + Etoposide (2) Clofarabine based (2) FLAG + Mitoxantrone (1) FLAG + Idarubicin (1)
DNMTi based (n=16)	DNMTi monotherapy (13) DNMTi + JAK inhibitor (1) DNMTi + FLT3 inhibitor (1) DNMTi + investigational agent (1)
Targeted monotherapy (n=11)	IDH inhibitor (9) FLT3 inhibitor (2)
Other (n=13)	Investigational agent (8) LDAC + VEN (3) JAK inhibitor (1) Lenalidomide (1)

FLAG = fludarabine + cytarabine + granulocyte colony stimulating factor; HIDAC = high-dose cytarabine; MEC = mitoxantrone + etoposide + cytarabine; CLAG-M = cladribine + cytarabine + granulocyte colony stimulating factor + mitoxantrone; DNMTi = DNA methyltransferase inhibitor; JAK = Janus kinase; IDH = isocitrate dehydrogenase; VEN = venetoclax; LDAC = low-dose cytarabine; FLT3 = FMS-like tyrosine kinase 3

Supplemental Table 3: Patient demographics and disease characteristics during chronic-phase MPN and at diagnosis of MPN-AP/BP in patients that received allo-HCT

Demographics Table	N=65
Age at chronic phase MPN diagnosis, median	58.6

Female, n (%)	22 (33.8)
Race/Ethnicity, n (%) (n=48)	
White Race	47 (97.9)
Black Race	1 (2.1)
Asian Race	0 (0.0)
Other Race	0 (0.0)
Hispanic Ethnicity	4 (8.3)
Chronic-Phase MPN	
Polycythemia vera	10 (15.9)
Essential thrombocythemia	22 (34.9)
Primary myelofibrosis	18 (28.6)
MPN-not otherwise specified/Other	13 (20.6)
Chronic-Phase MPN driver mutation	N=65
<i>JAK2</i>	38 (58.5)
<i>CALR</i>	15 (23.1)
<i>MPL</i>	7 (10.8)
Triple Negative	5 (7.7)
Therapies Received for chronic-phase MPN, n (%)	N=65
Hydroxyurea	36 (55.4)
JAK inhibitor	19 (29.2)
Interferon	5 (7.7)
DNMTi	3 (4.6)
MPN-AP/BP Characteristics	
Age at MPN-AP/BP diagnosis, median	65.0
Latency between chronic-phase MPN and MPN-AP/BP in years, median	6.2
2017 ELN Risk	
Favorable	1 (1.6)
Intermediate	22 (35.5)
High	39 (62.9)
Clinical Features at MPN-AP/BP Diagnosis	
WBC ($10^3/\mu\text{L}$), median	6.4
Hemoglobin (g/dL), median	9.4
Platelet Count ($10^3/\mu\text{L}$), median	141.0
Peripheral Blast %, median	12.0
Marrow Blast %, median	22.0
Creatinine g/dL, median	0.9
Total Bilirubin g/dL, median	0.7
Splenomegaly, n (%)	36 (56.3)

MPN = myeloproliferative neoplasm; AP/BP = accelerated/blast phase; JAK = Janus Kinase; DNMTi = DNA methyltransferase inhibitor; allo-HCT = allogeneic hematopoietic stem cell transplant; WBC = white blood count; ELN = European LeukemiaNet

Supplemental Table 4A: Univariate Analyses, Odds ratio for receipt of allo-HCT in patients with accelerated/blast phase MPN

Variable	Odds Ratio (95% CI)	p-value
Age \geq 65	0.327 (0.175, 0.611)	0.0005

WBC > 25 x 10 ³ /μL	0.257 (0.113, 0.584)	0.001
Platelet > 100 x 10 ³ /μL	1.844 (1.012, 3.361)	0.046
Hemoglobin > 10g/dL vs < 8g/dL	3.694 (1.629, 8.376)	0.002
Hemoglobin 8-10 g/dL vs < 8g/dL	1.564 (0.753, 3.247)	0.51
Peripheral blasts ≥ 20% vs < 10%	0.595 (0.280, 1.266)	0.18
Peripheral blasts 10-19% vs < 10%	1.382 (0.673, 2.838)	0.38
Marrow blasts ≥ 20% vs <10%	3.078 (0.656, 14.444)	0.15
Marrow blasts 10-19% vs <10%	4.285 (0.862, 21.290)	0.08
Total bilirubin (g/dL)	0.964 (0.493, 1.889)	0.92
Creatinine (g/dL)	0.279 (0.100, 0.780)	0.015
Splenomegaly	1.286 (0.705, 2.343)	0.41
Driver Mutation Status		
<i>JAK2</i>	0.835 (0.457, 1.525)	0.56
<i>CALR</i>	2.159 (1.019, 4.575)	0.045
<i>MPL</i>	1.151 (0.436, 3.036)	0.78
Triple negative	0.392 (0.142, 1.081)	0.07
ELN risk		
High-risk vs intermediate / favorable	0.780 (0.412, 1.474)	0.44
Mutation Status		
<i>TP53</i>	0.573 (0.263, 1.249)	0.16
<i>IDH1</i>	1.820 (0.534, 6.197)	0.34
<i>IDH2</i>	0.518 (0.184, 1.454)	0.21
<i>ASXL1</i>	0.811 (0.407, 1.615)	0.55
<i>EZH2</i>	1.059 (0.347, 3.234)	0.92
<i>SRSF2</i>	0.677 (0.308, 1.490)	0.33
<i>RUNX1</i>	1.598 (0.713, 3.581)	0.25
Frontline Treatment		
IC	1.705 (0.907, 3.207)	0.10
DNMTi + VEN based	0.769 (0.387, 1.527)	0.45
DNMTi based	0.730 (0.380, 1.402)	0.34
Chronic-phase MPN type		
ET vs other	1.399 (0.597, 3.278)	0.068
PMF vs other	0.706 (0.299, 1.671)	0.35
PV vs other	0.641 (0.241, 1.709)	0.27

Supplemental Table 4B: Multivariate model results, Odds ratio for receipt of allo-HCT in patients with accelerated/blast phase MPN

Variable	Odds Ratio (95% CI)	p-value
Age ≥ 65	0.365 (0.185, 0.720)	0.004
WBC > 25 x 10 ³ /μL	0.219 (0.091, 0.527)	0.0007

Hemoglobin > 10g/dL vs < 8g/dL	4.218 (1.742, 10.213)	0.005
Hemoglobin 8-10 g/dL vs < 8g/dL	2.076 (0.947, 4.552)	0.97
<i>CALR</i> mutation status	2.017 (0.878, 4.635)	0.10

MPN = myeloproliferative neoplasm; AP/BP = accelerated/blast phase; WBC = white blood count; ELN = European LeukemiaNet; IC = intensive chemotherapy; DNMTi = DNA methyltransferase inhibitor; VEN = venetoclax; ET = essential thrombocythemia; PMF = primary myelofibrosis; PV = polycythemia vera

Supplemental Table 5A: Univariate analyses of factors impacting overall survival from time of allo-HCT in patients with MPN-AP/BP

Variable	Hazard ratio (95% CI)	p-value
Age ≥ 65	1.983 (0.995, 3.950)	0.052
WBC > 25 x 10 ³ /μL	1.329 (0.462, 3.819)	0.60
Platelet > 100 x 10 ³ /μL	0.877 (0.447, 1.720)	0.70
Hemoglobin > 10g/dL vs < 8g/dL	0.209 (0.086, 0.507)	0.0005
Hemoglobin 8-10 g/dL vs < 8g/dL	0.272 (0.119, 0.623)	0.002
Peripheral blasts ≥ 20% vs < 10%	0.776 (0.316, 1.903)	0.58
Peripheral blasts 10-19% vs < 10%	1.035 (0.484, 2.212)	0.93
Marrow blasts ≥ 20% vs <10%	0.154 (0.033, 0.713)	0.017
Marrow blasts 10-19% vs <10%	0.189 (0.039, 0.909)	0.038
Total bilirubin (g/dL)	0.821 (0.427, 1.577)	0.55
Creatinine (g/dL)	0.213 (0.034, 1.341)	0.10
Splenomegaly	1.538 (0.758, 3.121)	0.23
Driver Mutation Status		
<i>JAK2</i>	0.746 (0.378, 1.470)	0.40
<i>CALR</i>	2.003 (0.953, 4.211)	0.07
<i>MPL</i>	2.324 (0.806, 6.701)	0.12
Triple negative	0.223 (0.030, 1.633)	0.14
2017 ELN risk		
High-risk vs intermediate / favorable	1.924 (0.912, 4.057)	0.09
Mutation Status		
<i>TP53</i>	3.601 (1.664, 7.793)	0.001
<i>IDH1</i>	0.992 (0.302, 3.262)	0.99
<i>IDH2</i>	0.246 (0.034, 1.797)	0.17
<i>ASXL1</i>	0.994 (0.449, 2.203)	0.99
<i>EZH2</i>	1.425 (0.501, 4.050)	0.51
<i>SRSF2</i>	0.715 (0.252, 2.027)	0.53
<i>RUNX1</i>	0.870 (0.360, 2.099)	0.76
Conditioning regimen		

Myeloablative vs Reduced Intensity	0.946 (0.429, 2.085)	0.89
Donor source		
Cord vs mismatched unrelated	0.000 (NA,NA)	0.99
Haploidentical vs mismatched unrelated	4.155 (0.888, 19.438)	0.07
Matched related vs mismatched unrelated	1.145 (0.230, 5.7000)	0.87
Matched unrelated vs mismatched unrelated	1.059 (0.242, 4.632)	0.94
GVHD development		
Acute GVHD	0.741 (0.368, 1.493)	0.40
Chronic GVHD	0.388 (0.160, 0.939)	0.036
Chronic-phase MPN type		
ET vs other	1.301 (0.499, 3.391)	0.59
PMF vs other	1.180 (0.419, 3.323)	0.75
PV vs other	1.182 (0.376, 3.709)	0.77

Supplemental Table 5B: Multivariate model of factors impacting overall survival from time of allo-HCT in patients with MPN-AP/BP

Variable	Hazard ratio (95% CI)	p-value
Age ≥ 65	3.989 (1.514, 10.508)	0.0051
Marrow blasts ≥ 20% vs <10%	2.512 (0.816, 7.735)	0.11
Marrow blasts 10-19% vs <10%	3.197 (1.127, 9.066)	0.03
Creatinine (g/dL)	0.062 (0.006, 0.690)	0.02
<i>TP53</i> mutation status	3.015 (1.121, 8.106)	0.03

Allo-HCT = allogeneic hematopoietic stem cell transplant; MPN = myeloproliferative neoplasm; AP/BP = accelerated/blast phase; WBC = white blood count; ELN = European LeukemiaNet; GVHD = graft versus host disease; ET = essential thrombocythemia; PMF = primary myelofibrosis; PV = polycythemia vera