

Table S1: Age, sex, disease subtype, IPSS-R risk category, and other clinical details of samples analyzed for TED

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
1	CUMC-125	2-1	75	M	RCMD	N/A	3	4	No Data	No Data	No Data	1:1	2.78	6.50	15.50	51.50	23.73
2	CUMC-178	2-2	75	M	RAEB-1	Low	7	No record	10.3	193	0.84	1:2	No TED detected (No TED)				
3	CUMC-228	2-3	76	M	RCMD	Intermediate	3	6	8.5	98	0.13	1:1	1.32	3.19	10.25	48.26	36.99
4	CUMC-261	2-4	76	M	RCMD	Intermediate	3	Not present	9	188	0.69	1:1	0.78	2.01	11.38	45.68	40.16
5	CUMC-049	3-1	70	M	RARS	Low	1	22	7.6	154	6.73	1.5:1	2.55	5.06	10.14	26.83	55.42
6	CUMC-312	4-1	72	M	MDS/MPN (RARS-T)	N/A	1	6/11	9.6	534	3.55	4:1	3.60	5.57	8.25	27.27	55.30
7	CUMC-052	5-1	61	F	RAEB-2	Very high	15	100	10.4	78	0.31	1:2	0.70	4.21	12.68	27.71	54.70
8	CUMC-110	6-1	77	M	RCMD	Intermediate	3	Not present	8.7	279	0.54	4:1	No TED detected (No TED)				
9	CUMC-251	6-2	78	M	RCMD	Low	2	Not present	8.3	207	0.61	2:1	No TED detected (No TED)				
10	CUMC-175	7-1	77	F	RA	Low	1	Not present	8.1	391	3.99	1.5:1	7.44	17.18	41.00	19.02	15.35
11	CUMC-292	7-2	78	F	RARS	Low	1	28	7.7	331	3.93	2.5:1	7.97	12.88	9.83	38.50	30.83
12	CUMC-210	9-1	66	M	RA	Very low	2	Not present	12	204	2.91	1-2:1	2.26	7.39	13.40	36.49	40.46
13	CUMC-211	10-1	82	M	RAEB-2	High	15	3	10.7	21	1.61	1-2:1	0.72	2.02	9.95	40.03	47.28
14	CUMC-148	11-1	60	M	RCMD	Intermediate	1	10	6.5	10	1.47	2:1	3.32	5.05	17.03	44.98	29.22
15	CUMC-309	12-1	90	M	RAEB-1	Intermediate	6	No record	10	16	0.71		6.90	12.76	15.74	19.72	44.88
16	CUMC-144	13-1	55	F	RCMD-RS	Low	1	50	8.7	107	1.88	32:1	No TED detected (No TED)				
17	CUMC-213	14-1	72	M	RAEB-1	N/A	6	9	No Data	No Data	No Data	3:1	0.19	1.82	14.48	37.85	45.66
18	CUMC-104	15-1	69	F	RCMD-RS	Very low	1	51	10.6	71	1.76	4:1	4.23	12.38	20.69	45.35	17.35
19	CUMC-071	16-1	54	M	RCMD	Intermediate	<5	No record	8.5	139	0.31	Not calculate	No TED detected (No TED)				
20	CUMC-226	16-2	55	M	RCMD	Intermediate	1	Not present	6.1	74	0.41	1:1	No TED detected (No TED)				
21	CUMC-078	17-1	76	F	RAEB-1	Low	5	50	12.2	243	5.96	1:1	1.61	4.12	13.89	43.38	36.99
22	CUMC-229	17-2	77	F	RAEB-2	High	13	Inadequate	7.9	105	0.66	1.2:1	0.95	1.33	4.47	26.61	66.63
23	CUMC-264	17-3	77	F	RAEB-2	AML	10-25	Not present	11.6	111	1.88	2.5:1	No TED detected (No TED)				
24	CUMC-305	18-1	85	M	RCMD	N/A	3	Not present	9.6	65	1.5	2:1	1.55	3.42	6.51	36.94	51.59
25	CUMC-072	19-1	62	M	RCMD	Intermediate	1	10	9.7	121	0.33	1:1	2.42	4.10	7.95	22.59	62.95
26	CUMC-198	19-2	63	M	RCMD	Intermediate	1	Mildly above 15	9.6	118	0.29	1:1.4	2.72	5.46	12.03	26.13	53.66
27	CUMC-075	20-1	74	M	RAEB-1	Low	9	Not present	10.2	169	1.01	1:2	3.01	3.54	16.87	36.85	39.74

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
28	CUMC-233	21-1	83	M	RARS	Very low	1	80	10.2	280	0.93	1.4:1	1.01	1.74	5.36	25.71	66.18
29	CUMC-044	22-1	75	F	RCMD	Intermediate	4	Not present	13	63	0.7	1:1	1.84	3.93	16.82	49.88	27.54
30	CUMC-139	22-2	75	F	RCMD	Intermediate	1	No record	12.3	50	1.01	1:2	No TED detected (No TED)				
31	CUMC-086	24-1	69	M	RCMD	Very low	0	6	12.5	88	3.17	3:1	1.85	6.54	20.93	47.50	23.18
32	CUMC-224	24-2	70	M	RCMD	Intermediate	3	10	14.8	64	2.32	2:1	1.40	2.84	14.42	40.37	40.96
33	CUMC-094	25-1	50	F	RAEB-1	Very high	9	12	11	60	0.2	2:1	0.10	1.56	10.34	71.20	16.81
34	CUMC-093	26-1	79	M	RCMD	Low	1	7	9.6	86	2.69	9:1	2.88	5.84	14.70	38.01	38.57
35	CUMC-040	27-1	78	F	RAEB-1	High	8	9	9	38	1.25	5:1	3.86	5.81	11.91	25.34	53.07
36	CUMC-064	27-2	78	F	RAEB-2	Very high	12	15	8.4	76	3.5	3:1	0.72	2.92	13.62	32.15	50.60
37	CUMC-249	28-1	79	M	RCMD-RS	Low	2	61	9.7	207	1.19	1:2	1.85	2.03	6.35	30.36	59.40
38	CUMC-284	31-1	60	F	RCMD	Intermediate	1	Present but unable to count	10.7	167	1.27	2:1	No TED detected (No TED)				
39	CUMC-174	32-1	82	M	RAEB-2	Intermediate	16	Not present	13.1	117	0.67	3.5:1	1.78	2.72	17.26	52.04	26.20
40	CUMC-202	32-2	82	M	RAEB-2	Intermediate	15	Not present	12.3	106	0.91	1.5:1	1.80	3.52	9.64	33.10	51.95
41	CUMC-230	32-3	82	M	RAEB-2	High	16	Not present	11.9	93	0.49	1:1.2	1.17	3.24	4.94	21.53	69.11
42	CUMC-053	34-1	87	M	RCMD	Low	1	Not present	10.4	9	2.14	2:1	3.65	8.16	14.86	25.49	47.84
43	CUMC-156	34-2	88	M	RCMD	Low	1	Not present	9.9	12	3.52	2.75:1	1.78	4.58	14.07	31.52	48.05
44	CUMC-115	35-1	76	F	RAEB-2	Low	10	20	10.4	137	1.33	1:2	0.86	1.59	8.94	32.42	56.19
45	CUMC-165	35-2	77	F	RAEB-2	Intermediate	10	25	8.4	200	4.79	4:1	No TED detected (No TED)				
46	CUMC-214	35-3	77	F	RAEB-1	Intermediate	9	>15	8.8	166	7.84	>5:1	1.38	2.34	9.79	38.61	47.88
47	CUMC-262	35-4	78	F	RAEB-1	N/A	5	No record	7.7	174	No Data	>10:1	0.41	0.82	5.32	29.73	63.73
48	CUMC-154	36-1	74	M	RAEB-1	High	6	40	8.9	37	0.66	1:5	4.17	10.74	19.19	41.24	24.66
49	CUMC-171	36-2	74	M	RARS	Intermediate	4	80	9.4	25	0.76	1:3	2.22	3.33	16.51	42.32	35.63
50	CUMC-218	36-3	74	M	RCMD	Low	2	Not present	8.7	33	1.88	1.5:1	2.17	8.53	28.95	39.41	20.94
51	CUMC-103	37-1	83	F	RCMD-RS	Very high	3	15	9.1	62	1.95	5:1	No TED detected (No TED)				
52	CUMC-151	37-2	84	F	RCMD-RS	Very high	4	95	7.8	50	1.45	2.5:1	No TED detected (No TED)				
53	CUMC-167	38-1	84	F	MDS/MPN (RARS-T)	N/A	1	85	9.3	614	6.95	1.5:1	2.00	3.65	7.99	27.58	58.78
54	CUMC-186	38-2	85	F	MDS/MPN (RARS-T)	Low	1	68	8.9	586	4.9	1:1	3.56	6.01	15.11	29.57	45.74
55	CUMC-215	38-3	85	F	MDS/MPN (RARS-T)	Low	2	96	9.6	505	4.49	1:1	2.35	3.78	12.85	27.04	53.98

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
56	CUMC-157	39-1	95	F	RCMD-RS	Low	3	35	8.7	230	3.28	2:1	0.40	2.27	13.48	53.28	30.56
57	CUMC-318	40-1	66	F	RAEB-2	N/A	No Info	Not present	8.6	179	0.2	not calculate	No TED detected (No TED)				
58	CUMC-301	41-1	78	M	RAEB-2	High	11	Not present	9.6	38	5.05	>5:1	No TED detected (No TED)				
59	CUMC-313	41-2	78	M	RAEB-1	High	9	Not present	8.7	13	0.38	7:1	No TED detected (No TED)				
60	CUMC-276	42-1	64	M	RCUD-RN	N/A	1	Not present	14.9	170	No Data	2.8:1	1.85	4.97	12.17	48.52	32.50
61	CUMC-140	43-1	71	M	RCMD	Low	<5	Not present	10.7	11	2.4	2:1	No TED detected (No TED)				
62	CUMC-236	43-2	72	M	RCMD-RS	Intermediate	4	20	10.6	9	2.2	1:2	No TED detected (No TED)				
63	CUMC-098	45-1	52	M	RCMD	Very low	1	Not present	15.7	254	0.85	1:1	2.68	5.76	11.70	26.75	53.11
64	CUMC-290	45-2	53	M	RCMD	Very low	1-2	Not present	19.4	291	1.38	1:1	5.83	11.13	19.29	49.56	14.19
65	CUMC-285	46-1	71	M	RCMD	N/A	1	Not present	10.6	285	No Data	3.5:1	No TED detected (No TED)				
66	CUMC-162	47-1	75	M	RCMD	Intermediate	4	1	10.2	28	4.83	5:1	1.28	2.18	17.38	24.85	54.36
67	CUMC-179	47-2	75	M	RCMD	Intermediate	3	5	10	44	15.99	50:1	2.76	4.81	12.53	59.80	22.86
68	CUMC-111	48-1	76	M	RARS	Low	1	95	8.4	303	2.22	2:1	3.70	7.49	10.45	25.68	52.67
69	CUMC-283	48-2	77	M	RARS	N/A	1	50	8.8	350	No Data	3.6:1	3.56	6.78	10.61	46.93	32.12
70	CUMC-113	49-1	68	F	RCMD	N/A	No Info	No record	11.8	443	3.56	not calculate	No TED detected (No TED)				
71	CUMC-170	49-2	68	F	RCMD	Intermediate	4.5	Not present	7.1	152	0.72	5:1	No TED detected (No TED)				
72	CUMC-073	50-1	78	M	RCMD	Low	0	Not present	9.8	11	1.83	1:1	2.06	2.20	6.23	33.45	56.06
73	CUMC-149	51-1	73	M	RAEB-1	Intermediate	6	100	9.7	281	2.25	1:1	1.10	2.14	10.65	28.22	57.89
74	CUMC-188	51-2	73	M	RAEB-2	High	15	>15	8.3	224	1.78	1-2:1	1.55	2.47	15.34	33.95	46.70
75	CUMC-240	51-3	74	M	RCMD-RS	Low	2	>15	8.5	43	0.91	3.5:1	No TED detected (No TED)				
76	CUMC-267	51-4	74	M	RAEB-1	N/A	10	50	9.4	16	No Data	Increased	1.22	2.74	8.04	28.60	59.41
77	CUMC-287	51-5	74	M	RAEB-2	N/A	No Info	Unable to asses	8.6	30	No Data	not calculate	3.47	4.53	9.26	30.32	52.42
78	CUMC-081	52-1	50	F	RCMD	Very low	1	50	14.2	61	3.55	2-3:1	3.37	6.94	13.39	50.74	25.55
79	CUMC-106	54-1	73	M	RCMD-RS	Low	1	85	9.1	189	1.71	1:1-1.5	3.08	9.36	12.97	26.71	47.88
80	CUMC-243	54-2	74	M	RCMD-RS	Low	1	70	8.3	171	0.86	1:1	3.27	5.66	15.02	29.43	46.61
81	CUMC-056	55-1	79	F	RARS	Low	0	80	7.9	237	5.31	1:1	2.89	2.81	12.62	34.18	53.20
82	CUMC-067	55-2	80	F	RARS	Very low	1	90	11.6	201	3.6	2:1	6.18	6.72	12.74	38.69	35.67
83	CUMC-147	55-3	80	F	RARS	Low	0	80	9.8	164	2.69	4:1	0.56	2.24	9.35	31.97	55.87

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
84	CUMC-266	55-4	81	F	RARS	Low	1	80	9.2	191	2.26	1.5:1	2.59	2.63	10.75	32.66	51.37
85	CUMC-316	56-1	71	F	RCMD	N/A	2	Not present	No Data	No Data	No Data	2:1	3.53	5.44	6.36	47.53	37.14
86	CUMC-070	57-1	74	F	RAEB-1	Intermediate	7	Not present	9.5	180	0.31	3:1	No TED detected (No TED)				
87	CUMC-181	57-2	75	F	RAEB-2	High	13	Not present	11.2	14	0.07	59:1	No TED detected (No TED)				
88	CUMC-176	58-1	67	M	RAEB-2	Intermediate	10	72	9.3	145	4.56	2:1	1.17	2.88	15.23	36.89	43.82
89	CUMC-231	58-2	67	M	RAEB-2	High	14	60	7.2	94	1.81	1.8:1	0.85	1.88	7.25	26.97	63.06
90	CUMC-255	58-3	67	M	RAEB-2	Intermediate	10	75	9.8	217	1.77	1:1	0.46	0.92	3.41	31.47	63.74
91	CUMC-288	58-4	68	M	RARS	Very low	2	35	12.7	281	4.17	1:1	2.11	4.49	10.82	37.47	45.12
92	CUMC-046	59-1	66	F	RCMD-RS	Very low	1	85	10.1	280	4.88	1:1	2.52	3.65	21.75	27.49	44.59
93	CUMC-054	59-2	66	F	RCMD-RS	Very low	1	100	10.2	368	6.09	2:1	No TED detected (No TED)				
94	CUMC-069	59-3	66	F	RCMD-RS	Low	2	90	8.4	222	3.36	1:2	2.30	3.59	11.11	26.88	56.12
95	CUMC-100	59-4	66	F	RAEB-1	Intermediate	5	82	8	183	3.66	2:1	2.50	5.57	12.25	24.17	55.51
96	CUMC-158	59-5	67	F	RARS	Intermediate	1	16	8.7	69	2.83	11:1	1.80	1.55	12.07	34.22	50.36
97	CUMC-269	60-1	72	M	RCMD-RS	Intermediate	2	20	8.5	95	1.29	1.3:1	No TED detected (No TED)				
98	CUMC-306	60-2	72	M	RAEB-2	Very high	13	Not present	8.1	23	0.33	Notedly incre:	No TED detected (No TED)				
99	CUMC-065	61-1	61	M	RARS	Low	1	90	9.6	422	4.33	1:1	2.43	5.98	16.70	37.44	37.44
100	CUMC-307	61-2	63	M	RA	Very low	1	10	12.1	249	2.14	1:1	4.21	5.71	9.08	50.94	30.06
101	CUMC-295	62-1	67	M	RA	Low	1	Not present	8.8	406	3.45	No TED detected (No TED)					
102	CUMC-185	63-1	82	F	RARS	Very low	0	80	8	301	3.73	1:2	1.80	4.10	20.44	31.85	41.82
103	CUMC-090	65-1	73	M	RARS	Very low	0	65	11.7	176	2.39	1.5:1	3.21	5.63	11.66	25.67	53.83
104	CUMC-238	65-2	74	M	RCMD-RS	Very low	0	65	10.4	190	1.82	1:1	1.11	2.16	4.87	25.00	66.85
105	CUMC-135	66-1	76	M	RCMD	N/A	1	Not present	No Data	No Data	No Data	1.1:1	No TED detected (No TED)				
106	CUMC-220	66-2	77	M	RCMD	Intermediate	2	Not present	9.2	171	0.66	1:1.5	No TED detected (No TED)				
107	CUMC-112	67-1	67	M	RCMD	Intermediate	5	3	6.4	123	0.84	5:1	0.62	2.33	13.00	39.83	44.23
108	CUMC-195	67-2	68	M	RAEB-2	Very high	11	3	7.8	123	1.14	3.2:1	No TED detected (No TED)				
109	CUMC-066	69-1	73	F	RARS	Low	1	65	9.7	255	4.2	3:1	12.88	12.93	14.58	31.01	28.61
110	CUMC-271	69-2	75	F	RCMD-RS	Low	3	14	9.6	125	1.85	3.5:1	0.98	3.15	6.34	40.61	48.92
111	CUMC-085	70-1	70	M	RCMD	High	1	5	11.9	98	0.68	1.5:1	1.45	2.19	6.73	60.97	28.66

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
112	CUMC-241	70-2	72	M	RCMD	Low	2	Not present	12.3	60	0.56	1.4:1	0.92	1.33	4.20	29.05	64.50
113	CUMC-273	70-3	72	M	RCMD	Intermediate	3	Not present	12.3	54	5.46	2:1	No TED detected (No TED)				
114	CUMC-095	71-1	83	F	RA	Very low	0	Not present	10.6	184	4.84	2.5:1	3.87	6.83	12.36	24.92	52.03
115	CUMC-227	71-2	84	F	RA	Low	0	Not present	9.5	243	4.74	3:2	No TED detected (No TED)				
116	CUMC-289	71-3	84	F	RA	Very low	0	Not present	11.5	236	3.49	2:1	No TED detected (No TED)				
117	CUMC-057	72-1	80	F	RAEB-2	High	14	Not present	9.9	122	0.68	1.5:1	2.83	4.93	19.71	42.22	30.31
118	CUMC-153	72-3	80	F	RAEB-2	Very high	19	7	8.4	132	0.17	1.3:1	0.40	2.41	18.24	41.52	37.43
119	CUMC-275	72-5	81	F	RAEB-2	N/A	19	Inadequate	7.7	90	No Data	1:1	No TED detected (No TED)				
120	CUMC-092	73-1	82	M	RCMD-RS	Very low	1	40	9	167	0.81	1:1-2	2.35	4.59	10.51	29.81	52.74
121	CUMC-253	73-2	84	M	RCMD-RS	Very low	2	50	11.3	170	1.62	1:1	1.27	1.73	9.67	26.49	60.84
122	CUMC-108	74-1	64	M	RA	Very low	0	Not present	13.9	178	2.55	2:1	1.67	4.77	9.16	26.51	57.89
123	CUMC-256	74-2	66	M	RA	Very low	1	Not present	13.2	177	2.45	2:1	2.19	3.36	13.23	38.27	42.94
124	CUMC-068	75-1	74	F	RCMD-RS	Very low	1	80	11.8	289	3.33	2-1:1	7.40	17.05	28.08	22.90	24.57
125	CUMC-234	75-2	76	F	RCMD-RS	Low	1	45	9.2	239	1.92	2.3:1	2.13	3.85	8.14	25.15	60.73
126	CUMC-270	76-1	81	M	RAEB-1	N/A	6	30	8.6	208	No Data	1:2	No TED detected (No TED)				
127	CUMC-302	77-1	82	M	RAEB-1	Very high	7	Not present	8.7	73	0.39	2:1	1.45	4.70	6.91	38.62	48.33
128	CUMC-105	78-1	60	M	RCMD	Very low	1	Not present	15.2	81	1.32	1.5:1	2.65	7.75	15.98	51.22	22.40
129	CUMC-159	79-1	82	M	RCMD	Low	4	Not present	11.1	232	3.58	2:1	1.79	5.92	23.57	40.96	27.75
130	CUMC-247	79-2	83	M	RCMD	Low	<5	No information	9.4	162	2.98		No TED detected (No TED)				
131	CUMC-263	79-3	83	M	RCMD	N/A	<5	No information	8.8	69	No Data		No TED detected (No TED)				
132	CUMC-177	80-1	79	F	MDS/MPN (RARS-T)	N/A	1	90	6.9	494	2	1:2.9	No TED detected (No TED)				
133	CUMC-299	80-2	80	F	MDS/MPN (RARS-T)	Intermediate	<5	80	7.2	452	2.66		No TED detected (No TED)				
134	CUMC-155	81-1	74	M	RAEB-1	Very high	6	1	8.1	31	0.58	2:1	0.36	4.91	22.72	37.16	34.85
135	CUMC-225	81-2	75	M	RCMD	Intermediate	4	8	8.7	58	1.89	1:3-4	1.84	3.39	9.26	43.91	41.61
136	CUMC-130	82-1	72	F	RCMD-RS	N/A	4	54	7.7	46	No Data	1-2:1	3.92	3.76	10.31	26.97	55.04
137	CUMC-122	83-1	79	M	RCMD-RS	Intermediate	1	15	9.7	40	2.6	1.5:1	2.95	4.89	20.10	45.08	26.98
138	CUMC-083	84-1	74	M	RARS	N/A	4	50	8	451	No Data	not calculate	3.05	7.20	19.67	29.89	40.18
139	CUMC-216	84-2	82	M	RCMD-RS	Low	0	50	12.3	79	0.78	1.5:1	3.44	8.13	16.42	39.31	32.69

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
140	CUMC-250	84-3	76	M	RCMD-RS	Low	3	30	12.2	145	1	1:1	1.83	2.94	9.75	32.55	52.94
141	CUMC-203	86-1	72	M	RCMD	Intermediate	2	9	12.8	70	5.03	1:1.3	5.05	14.75	24.56	31.85	23.79
142	CUMC-132	88-1	72	F	RCMD	Very low	1	Not present	13	86	1.43	1-2:1	0.99	2.34	14.35	41.56	40.76
143	CUMC-145	89-1	65	F	RCMD	High	4	Not present	10.4	126	1.96	1:3	1.09	2.70	9.38	27.18	59.66
144	CUMC-217	89-2	65	F	RCMD-RS	Very high	2	70	7.8	94	0.36	<1:10	0.34	1.03	12.84	41.84	43.94
145	CUMC-254	89-3	65	F	RAEB-2	Very high	11	7	8.8	26	0.03	1:5	0.19	0.47	4.25	28.69	66.40
146	CUMC-050	90-1	62	M	RA	Low	1	Not present	13.1	47	1.29	1.5:1	3.58	7.51	17.75	54.86	16.30
147	CUMC-183	90-2	64	M	RA	Low	2	No record	10.2	70	0.73	1/1-2	2.85	6.40	16.78	45.86	28.11
148	CUMC-314	90-3	65	M	RCMD	Intermediate	1	Not present	9.4	30	0.41	1.5:1	1.41	3.13	8.17	38.75	48.54
149	CUMC-252	91-1	66	F	RCMD	Low	1	Not present	11.8	36	1.03	3:1	0.69	2.69	5.37	36.13	55.12
150	CUMC-173	92-1	78	M	RAEB-2	Very high	18	Not present	7.9	35	2.85	7:1	No TED detected (No TED)				
151	CUMC-308	93-1	74	M	RCMD-RS	Low	2	90	5.1	98	1.68	1.5:1	9.35	15.97	21.28	23.30	30.10
152	CUMC-055	95-1	70	M	RCMD-RS	Low	4	65	8.8	324	2.23	2-3:1	2.06	5.95	19.10	40.52	32.36
153	CUMC-079	95-2	70	M	RCMD-RS	Low	4	95	8.5	350	4.83	1.5:1	2.05	6.74	18.96	34.18	38.06
154	CUMC-205	95-3	71	M	RCMD-RS	Low	3	19	11.3	256	11.65	2.7:1	2.43	6.56	19.78	43.35	27.88
155	CUMC-260	95-4	71	M	RARS	Very low	2	9	10.3	254	4.57	3:1	1.62	3.28	11.72	30.45	52.92
156	CUMC-109	97-1	66	F	MDS/MPN (RARS-T)	N/A	3	50	9	781	1.2	1:1	2.13	3.88	17.25	31.59	51.17
157	CUMC-258	97-2	68	F	RARS	N/A	No Info	Unable to asses	6.4	241	0.84	Not calculate	No TED detected (No TED)				
158	CUMC-045	98-1	37	F	RCMD	Low	0	Not present	10.4	42	1.83	1.5:1	0.79	1.95	9.09	36.42	51.75
159	CUMC-248	99-1	67	M	RCMD	Low	1	Not present	14.4	25	0.54	2:1	1.88	5.36	18.66	44.27	29.84
160	CUMC-116	100-1	86	M	RCMD	Low	1	Not present	8.4	137	1.46	20:1	0.19	0.47	6.02	33.17	60.19
161	CUMC-150	100-2	86	M	RCMD	Low	1	Not present	6.9	127	1.48	105:1	No TED detected (No TED)				
162	CUMC-197	100-3	87	M	RCMD	Low	0	No record	7.9	159	1.77	>5:1	1.32	1.76	6.08	31.30	59.54
163	CUMC-223	100-4	87	M	RCMD	Intermediate	<5	No record	7.5	110	1.61	>10:1	No TED detected (No TED)				
164	CUMC-237	100-5	87	M	RCMD	Intermediate	3	No record	6	188	2.08	20:1	No TED detected (No TED)				
165	CUMC-296	100-6	88	M	RCMD	Low	2	Not present	8.4	182	1.85	>10:1	No TED detected (No TED)				
166	CUMC-060	101-1	59	F	RA	Very low	0	Not present	10.8	59	0.8	1:2	No TED detected (No TED)				
167	CUMC-190	101-2	60	F	RA	Very low	1	Not present	12.7	122	1.63	1:1	0.12	5.15	15.26	49.91	29.57

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
168	CUMC-051	102-1	70	F	RAEB-1	High	8	35	10	96	0.4	1.3:1	0.57	13.22	13.79	59.68	29.93
169	CUMC-123	103-1	71	M	RCMD-RS	N/A	1	82	9.6	307	2.12	1:2	0.60	2.27	20.69	36.07	40.38
170	CUMC-097	104-1	81	M	RCMD-RS	Intermediate	1	83	7.7	145	2.75	1:1	4.36	7.23	11.18	25.81	51.42
171	CUMC-232	104-2	82	M	RARS	Intermediate	0	60	7.5	243	3.01	1:1	1.57	3.40	10.28	35.89	48.85
172	CUMC-300	104-3	83	M	RARS	Intermediate	1	80	7.9	314	4.38	1:1	2.69	4.26	8.11	48.17	36.76
173	CUMC-182	105-1	83	F	RAEB-1	Intermediate	7	Present (Unable to asses)	7.3	131	0.99	3:1	No TED detected (No TED)				
174	CUMC-222	105-2	84	F	RCMD-RS	Low	4	50	10.55	88	0.92	1:2	1.51	4.31	10.17	35.07	48.93
175	CUMC-244	105-3	84	F	RCMD-RS	Intermediate	4	60	7	75	0.85	1.3:1	3.29	4.68	15.08	34.49	42.46
176	CUMC-196	106-1	69	M	RCMD-RS	Low	2	93	6.3	222	2.53	1:1.9	3.87	6.58	19.12	28.61	41.82
177	CUMC-212	106-2	69	M	RCMD-RS	Low	2	93	7.9	227	1.8	No TED detected (No TED)					
178	CUMC-206	107-1	66	M	RAEB-2	Intermediate	12	Not present	13.7	132	1.15	1:1	2.74	5.98	9.84	48.65	32.78
179	CUMC-048	108-1	74	M	RCMD	Intermediate	5	Not present	10.7	88	4.74	9:1	No TED detected (No TED)				
180	CUMC-126	110-1	62	M	RAEB-1	High	7	Not present	9	18	2.88	2:1	3.24	3.31	24.62	37.84	31.00
181	CUMC-194	111-1	59	F	MDS/MPN (RARS-T)	N/A	2	70	8.6	797	4.09	1.9:1	5.52	6.58	10.43	24.19	53.29
182	CUMC-239	111-2	59	F	MDS/MPN (RARS-T)	Very low	1	50	10.9	497	2.99	3:1	No TED detected (No TED)				
183	CUMC-279	112-1	83	F	RCMD	N/A	1	Not present	7.3	41	No Data	<1:1	No TED detected (No TED)				
184	CUMC-304	113-1	89	M	RARS	Low	1	45	9.1	237	2	2:1	1.34	3.38	9.42	50.43	35.43
185	CUMC-280	114-1	79	M	RCMD-RS	N/A	1	70	8.7	254	No Data	10:1	4.07	8.41	16.99	33.60	36.92
186	CUMC-114	115-1	65	F	RCMD	N/A	No Info	Not present	8.9	191	1.23	Not calculate	No TED detected (No TED)				
187	CUMC-152	115-2	65	F	RCMD	High	3	No record	6.3	252	2.51	15:1	No TED detected (No TED)				
188	CUMC-319	116-1	68	M	RCMD	Intermediate	1	Not present	8.5	60	1.23	1.5:1	0.95	2.15	5.25	34.37	57.28
189	CUMC-191	117-1	86	M	RCMD	Low	1	Not present	10.2	29	1.51	2.4:1	0.73	3.78	17.13	32.22	46.15
190	CUMC-163	118-1	68	F	RCMD	Low	1	Unable to asses	9.9	108	2.37	36:1	No TED detected (No TED)				
191	CUMC-076	122-1	71	F	RCMD	N/A	No Info	Not present	9.7	52	2.08	Not calculate	1.91	2.61	11.20	36.98	47.29
192	CUMC-168	122-2	72	F	RCMD	Intermediate	2	Not present	9.5	60	2.13	7:1	0.46	1.29	6.22	41.00	51.03
193	CUMC-246	122-3	72	F	RCMD	Intermediate	1	Not present	8.8	27	2.24	1.5:1	0.63	0.66	7.73	26.34	64.64
194	CUMC-259	122-4	72	F	RCMD	Intermediate	2	Inadequate	9.3	28	1.4	2:1	1.22	2.87	12.15	28.95	54.81
195	CUMC-164	123-1	67	F	RAEB-2	Very high	17	No record	11	82	0.61	2:1	2.91	3.33	10.15	35.94	47.67

Sl.No.	Sample ID	Unique Patient ID - repeat order	Age <sup>1</sup>	Sex	WHO	Risk Category <sup>2</sup>	Myeloblast	Ring Sideroblast (%)	Hg (g/dL)	Platelets (10 <sup>9</sup> /L)	ANC (10 <sup>9</sup> /L)	M:E Ratio	Pro <sup>3</sup>	EB	LB	Poly	Ortho
196	CUMC-200	123-2	68	F	RAEB-2	Very high	15	Not present	9.9	76	0.69	2:1	1.58	3.01	15.78	41.88	37.75
197	CUMC-242	123-3	68	F	RAEB-2	Very high	15	Not present	8.2	95	1.16	able to ass	No TED detected (No TED)				
198	CUMC-131	124-1	78	M	RAEB-2	High	11	Not present	10.8	42	1.94	>5:1	0.44	3.83	14.02	43.04	38.67
199	CUMC-062	125-1	72	M	RA	Very low	1	Not present	12.1	51	2.94	1.5-2:1	4.92	5.15	17.30	42.36	30.28
200	CUMC-303	126-1	79	M	RA	Low	1	Not present	8.8	254	3.94	2.5:1	1.50	4.28	9.95	40.28	43.98
201	CUMC-208	128-1	81	F	RAEB-2	Very high	15	Not present	7.8	484	1	4:1	2.79	6.22	14.11	37.95	38.93
202	CUMC-265	129-1	79	F	RCMD-RS	Very low	2	25	13.9	163	0.8	2:1	0.98	2.27	12.92	33.23	50.59
203	CUMC-189	130-1	55	F	RCMD	Low	2	Not present	8	430	0.83	2:1	3.55	10.88	32.54	29.79	23.24
204	CUMC-286	131-1	67	F	RARS	N/A	1	25	11.6	197	No Data	3:1	No TED detected (No TED)				
205	CUMC-272	133-1	70	F	RCMD	Very low	2	Not present	11.9	236	2.13	3:1	1.40	5.89	23.23	35.05	34.42

1, Age at sample collection in years

2, IPSS-R is calculated for each sample, N/A=not enough information to calculate IPSS-R or it was RARS-T sample.

3, Adequate cells with GPA expression present but not enough cells to accurately quantify cells in various stages of TED



Table S2: Percentage of cells at each distinct stage of maturation in normal individuals. Data after normalization based on total nucleated erythroid cells as 100%.

Normal Samples	Pro	EB	LB	Poly	Ortho
1	4.3	8.5	15.1	25.5	46.8
2	2.8	5.5	13.1	27.4	51.2
3	4.6	10.1	22.8	29.4	33.1
4	2.3	6.2	13.2	28.9	49.4
5	3.9	8	14.2	30.4	43.8
6	5	7.1	14.3	26.8	46.8
7	2.3	5.3	13	27.2	51.3
8	4.1	7.6	11.7	26.8	49.8
9	5.3	7.7	14	24.5	48.5
10	3.7	7	16.6	35.7	37
11	2.1	3.1	10.9	29	54.9
12	3.9	6.4	12.1	25.3	52.4
13	3.5	8.4	12.4	24.3	51.5
14	3	4.8	10.9	31	50.3
15	2.4	4.1	12	28.2	53.3
16	4.6	7.7	14.5	25.5	47.6

Table S3: List of genes and the exon numbers analyzed by targeted sequencing

Sl.No.	Gene Name	Target Exons	Sl.No.	Gene Name	Target Exons
1	<i>ABL1</i>	4 to 6	28	<i>STAG2</i>	Full
2	<i>ASXL1</i>	12	29	<i>TET2</i>	3 to 11
3	<i>BCOR</i>	Full	30	<i>TP53</i>	2 to 11
4	<i>CALR</i>	9	31	<i>U2AF1</i>	2, 6
5	<i>CBL</i>	8 to 9	32	<i>ZRSR2</i>	Full
6	<i>CEBPA</i>	Full	33	<i>CSF3R</i>	14 to 17
7	<i>CUX1</i>	Full	34	<i>ATRX</i>	8 to 10, 17 to 31
8	<i>DNMT3A</i>	Full	35	<i>BCORL1</i>	Full
9	<i>ETV6</i>	Full	36	<i>BRAF</i>	15
10	<i>EZH2</i>	Full	37	<i>CBLB</i>	9 to 10
11	<i>GATA2</i>	2 to 6	38	<i>CBLC</i>	9 to 10
12	<i>IDH1</i>	4	39	<i>CDKN2A</i>	Full
13	<i>IDH2</i>	4	40	<i>FBXW7</i>	9 to 11
14	<i>JAK2</i>	12, 14	41	<i>FLT3</i>	14, 15, 20
15	<i>KIT</i>	2, 8-11, 13, 17	42	<i>GATA1</i>	2
16	<i>KMT2A</i>	5 to 8	43	<i>GNAS</i>	8 to 9
17	<i>KRAS</i>	2 to 3	44	<i>HRAS</i>	2 to 3
18	<i>MPL</i>	10	45	<i>IKZF1</i>	Full
19	<i>NPM1</i>	12	46	<i>JAK3</i>	13
20	<i>NRAS</i>	2 to 3	47	<i>KDM6A</i>	Full
21	<i>PDGFRA</i>	12, 14, 18	48	<i>MYD88</i>	3 to 5
22	<i>PTPN11</i>	3, 13	49	<i>NOTCH1</i>	26-28, 34
23	<i>RUNX1</i>	Full	50	<i>PHF6</i>	Full
24	<i>SETBP1</i>	4 partial	51	<i>PTEN</i>	5, 7
25	<i>SF3B1</i>	13-16	52	<i>RAD21</i>	Full
26	<i>SMC1A</i>	2, 11, 16, 17	53	<i>SMC3</i>	10, 13, 19, 23, 25, 28
27	<i>SRSF2</i>	1	54	<i>WT1</i>	7, 9

Table S4: Descriptive statistics for each TED stage in all samples from MDS and MDS-MPN (RARS-T) including samples obtained from same patients at different time-point and Normal samples

	Patients (n=149)		Normal (n=16)	
	Mean	Median	Mean	Median
Pro	2.3	1.9	3.6	3.8
EB	4.8	4.0	6.7	7.1
LB	13.2	12.4	13.8	13.2
Poly	36.1	35.1	27.9	27.3
Ortho	43.7	45.4	48.0	49.6

Table S5: Number of samples of each IPSS-R subtype between TED-positive and TED-negative samples

	TED	No TED
Very Low	27 (87%)	4 (13%)
Low	47 (80%)	12 (20%)
Intermediate	33 (66%)	17 (33%)
High	13 (76%)	4 (24%)
Very High	12 (63%)	7 (37%)

Table S6: Number of patients in each group on different therapies.

Drug/Therapy	TED (n=89)	NoTED (n=24)
Erythrocyte stimulating agent	10	0
Revlimid	2	3
Rigosertib	7	1
Hypomethylating agent	5	2
No therapy	54	16
Other/no information	11	2

Table S7: Mutation identified in 119 out 126 patients screened for mutations

Sl.No.	Unique ID	Gene (Mutation)
1	2	ASXL1 (p.Y700X); SRSF2 (p.Y92N); U2AF1 (p.Q157P);
2	3	U2AF1 (c.C101T;p.S34F);
3	4	KIT (c.145C>T;p.R49C); SF3B1 (c.1986C>A;p.H662Q);
4	5	CSF3R (c.2326C>T;p.Q776*); CUX1 (c.2536_2537delAC;p.T846Gfs*40 c.2542G>A;p.G848S c.2548_2556delAAAGAGAAG;p.K850_K852del c.2556G>T;p.K852N); U2AF1 (c.470A>C;p.Q157P); ZRSR2 (c.1338_1343dupGAGCCG;p.S447_R448dup);
5	6	TET2 (p.G1861R);
6	7	DNMT3A (c.547C>T;p.R183W); ZRSR2 (c.1338_1343dupGAGCCG;p.S447_R448dup);
7	9	None
8	10	None
9	11	None
10	12	BCOR (c.4618_4619insCA;p.L1540Pfs*7); BCOR (c.4618_4619insCA;p.L1540Pfs*7); IDH1 (c.257T>C;p.F86S); RUNX1 (c.317G>A;p.W106*); U2AF1 (c.101C>T;p.S34F);
11	13	RAD21 (c.121C>A;p.V41L);
12	14	BCOR (c.1005dupC;p.S336Lfs*45); BCOR (c.1005dupC;p.S336Lfs*45); IDH2 (c.419G>A;p.R140Q); RUNX1 (c.958C>T;p.R320* c.610C>T;p.R204* c.327_328dupCA;p.K110Tfs*13); SRSF2 (c.284C>A;p.P95H);
13	15	SF3B1 (c.1874G>T;p.R625L); TET2 (c.3646C>T;p.R1216*);
14	16	ASXL1 (c.3498C>G;p.S1166R); CDKN2A (c.379G>T;p.A127S);
15	17	IDH1 (c.395G>A;p.R132H); SF3B1 (c.2225G>A;p.G742D); TET2 (c.2599T>C;p.Y867H c.5167C>T;p.P1723S);
16	18	ASXL1 (c.3306G>T;p.E1102D); PHF6 (c.90dupG;p.L31Vfs*5); RUNX1 (c.281G>T;p.S94I); TET2 (c.651delC;p.V218Wfs*32); ZRSR2 (c.827C>A;p.S276*);
17	19	DNMT3A (c.939G>A;p.W313*); TET2 (c.3384T>A;p.Y1128* c.3823G>T;p.G1275W); U2AF1 (c.101C>T;p.S34F);
18	20	None
19	21	SF3B1 (c.2098A>G;p.K700E); STAG2 (c.1027G>A;p.V343I); TET2 (c.651delC;p.V218Wfs*32 c.3953A>C;p.E1318A c.4635G>C;p.Q1545H);
20	22	ASXL1 (Frameshift);
21	24	ASXL1 (c.C1210T;p.R404X); SRSF2 (c.C284T;p.P95L);
22	25	None
23	26	None
24	27	ASXL1 (c.2694G>A;p.W898*); NRAS (c.179G>A;p.G60E); RUNX1 (c.958C>T;p.R320*); SRSF2 (c.284C>A;p.P95H); TET2 (p.H1792Qfs*29c.4011T>A;p.Y1337* c.5319delC;p.F1773Lfs*47 c.5375_5376insAA);
25	28	SF3B1 (c.1866G>C;p.E622D); SRSF2 (c.284C>G;p.P95R);
26	31	BCOR (c.3763G>A;p.G1255S); BCOR (c.3763G>A;p.G1255S); GATA2 (c.481C>G;p.P161A);
27	32	None

Sl.No.	Unique ID	Gene (Mutation)
28	34	TET2 (c.845_846delCT;p.S282* c.5482C>T;p.Q1828*); U2AF1 (c.101C>T;p.S34F);
29	35	SF3B1 (p.K666T);
30	36	ASXL1 (p.T844I;c.2531C>Tp.L1395V;c.4183C>G); DNMT3A (c.1852-1G>A); U2AF1 (c.A470C:p.Q157P);
31	37	TP53 (c.T310G:p.Y104D);
32	38	DNMT3A (p.Y546C); SF3B1 (p.K700E);
33	39	TP53 (c.G422A:p.R141H;c.G347A:p.R116Q);
34	40	DNMT3A (c.2645G>A;p.R882H); TP53 (c.743G>A;p.R248Q);
35	41	ETV6 (c.602T>C;p.L201P c.1193T>A;p.L398Q); SRSF2 (c.284_307delCCCCGACTCACACCACAGCCGCC;p.P95_R102del); STAG2 (c.3223_3227delTCAAA;p.S1075Tfs*11);
36	42	Not sequenced
37	43	RUNX1 (c.G530A:p.R177Q); SRSF2 (c.C284G:p.P95R); TET2 (c.4045-1G>T);
38	45	None
39	46	CBL (c.1211G>A;p.C404Y); IDH1 (c.395G>A;p.R132H); KIT (c.1588G>A;p.V530I); SRSF2 (c.284C>G;p.P95R);
40	47	DNMT3A (c.2281A>G;p.M761V c.1802G>A;p.W601*); EZH2 (c.2084C>A;p.S695*); GATA2 (c.1160_1165delCCATGA;p.T387_M388del); KDM6A (c.2331T>A;p.N777K); TET2 (c.3378_3379delTC;p.Q1127Ifs*2); ZRSR2 (c.853delT;p.S285Lfs*20);
41	48	SF3B1 (p.D781G); TP53 (p.G266R);
42	49	JAK2 (c.G1849T:p.V617F); TP53 (c.G347A:p.R116Q); U2AF1 (c.A470G:p.Q157R);
43	50	TET2 (c.3637dupG;p.V1213Gfs*10 c.4393C>T;p.R1465*);
44	51	DNMT3A (c.1903C>G;p.R635G); SF3B1 (c.2098A>G;p.K700E);
45	52	ETV6 (c.77G>C;p.S26T);
46	54	SF3B1 (p.H662D);
47	55	SF3B1 (p.H662Q);
48	56	None
49	57	CSF3R (c.2087T>C;p.M696T); RUNX1 (c.472T>C;p.F158L); SRSF2 (c.284C>A;p.P95H); STAG2 (c.1644dupT;p.T549Yfs*11); TET2 (c.3748delG;p.E1250Rfs*3);
50	58	RUNX1 (c.292delC;p.L98Sfs*24); SF3B1 (c.2098A>G;p.K700E);
51	59	DNMT3A (c.2311C>T;p.R771*); SF3B1 (c.2098A>G;p.K700E); TET2 (c.4100C>A;p.P1367Q);
52	60	U2AF1 (c.101C>T;p.S34F);
53	61	DNMT3A (c.930T>G;p.I310M); SF3B1 (c.2098A>G;p.K700E);
54	62	ASXL1 (c.1934delG;p.G645Vfs*58 c.2385delC;p.W796Gfs*22 c.4189G>A;p.G1397S); SRSF2 (c.284C>A;p.P95H); TET2 (c.1648C>T;p.R550* c.3268_3269delAA;p.K1090Dfs*13 c.3409+1G>A c.3782G>A;p.R1261H c.5618T>C;p.I1873T);
55	63	GNAS (c.602G>A;p.R201H); SF3B1 (c.2098A>G;p.K700E); TET2 (c.2599T>C;p.Y867H c.3142delC;p.L1048Sfs*7 c.5167C>T;p.P1723S);
56	65	DNMT3A (c.1712_1719delCTGCCAG;p.A571Gfs*4); SF3B1 (c.2098A>G;p.K700E); TET2 (c.1664dupC;p.T556Nfs*11 c.4597A>T;p.K1533*);

Sl.No.	Unique ID	Gene (Mutation)
57	66	ASXL1 (c.1934_1935insG;p.G646WfsX12); ETV6 (c.1015A>G;p.R339G); EZH2 (c.1769_1772delGTCT;p.C590Lfs*84);
58	67	CUX1 (p.R158*); ETV6 (p.R160+); SF3B1 (p.K700E); TET2 (p.Q1191*);
59	69	SF3B1 (c.2347G>A;p.E783K);
60	70	KIT (c.200C>G;p.T67S); SRSF2 (c.284C>G;p.P95R); TET2 (c.1955dupA;p.F653Vfs*28 c.2871dupA;p.Q958Tfs*14);
61	71	None
62	72	ASXL1 (c.1919_1929del11; p.A640fs); CEBPA (c.1021A>G;p.I341V); RUNX1 (c.484A>G;p.R162G); SRSF2 (c.284C>A;p.P95H); STAG2 (c.852dupG;p.M285Dfs*6);
63	73	ETV6 (c.629G>A;p.R210H); PHF6 (p.C242S); SF3B1 (p.E622D); TET2 (p.Y1693*); ZRSR2 (p.Q127-);
64	74	None
65	75	SF3B1 (p.K700E);
66	76	EZH2 (c.392T>A;p.I131N); RUNX1 (c.601C>T;p.R201*); SF3B1 (c.2098A>G;p.K700E); SRSF2 (c.284C>A;p.P95H);
67	77	ASXL1 (c.2083C>T;p.Q695*); IDH2 (c.419G>A;p.R140Q); SRSF2 (c.284C>G;p.P95R); STAG2 (c.646C>T;p.R216*); ZRSR2 (c.1338_1343dupGAGCCG;p.S447_R448dup);
68	78	ATRX (c.5579A>G;p.N1860S); TET2 (c.4100C>G;p.P1367R c.4609C>T;p.Q1537*);
69	79	TET2 (c.2599T>C;p.Y867H c.5167C>T;p.S34F); U2AF1 (c.101C>T;p.S34F);
70	80	CALR (c.1092_1143del52; p.L367Tfs*46; c.1137G>C; p.E379D); SF3B1 (c.2098A>G; p.K700E); TP53 (c.743G>A; p.R248Q);
71	81	BCOR (c.4717+2T>C); BCOR (c.4717+2T>C); DNMT3A (c.2645G>A;p.R882H c.185G>A;p.S62N); TET2 (c.2599T>C;p.Y867H c.5167C>T;p.P1723S); U2AF1 (c.101C>A;p.S34Y);
72	82	SF3B1 (p.K700E);
73	83	ASXL1 (c.4189G>A;p.G1397S); DNMT3A (c.2645G>A;p.R882H); TET2 (c.1894C>T;p.Q632* c.3322_3323delCC;p.P1108Ffs*21);
74	84	ASXL1 (p.G646WfsX12;c.1934_1935insG); SF3B1 (p.K700E); TET2 (p.K201-);
75	86	KDM6A (c.2331T>A;p.N777K); ZRSR2 (c.541T>A;p.C181S);
76	88	TET2 (c.1176_1177delTT;p.S393Cfs*49 c.5100delT;p.N1700Kfs*19);
77	89	TP53 (p.V157F);
78	90	None
79	91	
80	92	IDH2 (c.419G>A;p.R140Q); NRAS (c.190T>G;p.Y64D); SRSF2 (c.284C>A;p.P95H);
81	93	JAK2 (c.1849G>T;p.V617F); SF3B1 (c.1986C>G;p.H662Q); TET2 (c.4282delG;p.E1428Sfs*20 c.5618T>C;p.I1873T);
82	95	RUNX1 (p.Q247-); SF3B1 (p.K700E); TET2 (p.R1455-;ML (1456-1457); -);
83	97	ASXL1 (c.2060_2061delGT;Frameshiftc.2957A>G;p.N986S); SF3B1 (p.E622D);
84	98	KDM6A (c.1960C>A;p.P654T);
85	99	SRSF2 (c.284C>A;p.P95H); TET2 (c.5473C>T;p.Q1825*);
86	100	DNMT3A (p.F1259L);
87	101	None
88	102	DNMT3A (c.2339T>C;p.I780T c.1474+1G>C); SF3B1 (c.2098A>G;p.K700E); SRSF2 (c.284C>T;p.P95L); TET2 (c.3986T>A;p.L1329Q c.4011T>A;p.Y1337*);



Sl.No.	Unique ID	Gene (Mutation)
89	103	ASXL1 (c.1900_1922delAGAGAGGGCGCCACCACTGCCAT;p.E635Rfs*15); EZH2 (c.786dupC;p.N263Qfs*8); SF3B1 (c.2098A>G;p.K700E);
90	104	SF3B1 (p.R625C);
91	105	None
92	106	SF3B1 (c.2098T>C p.K700E);
93	107	GATA2 (c.481C>G;p.P161A);
94	108	ASXL1 (c.2077C>T;p.R693*); EZH2 (c.2061C>A;p.N687K); NRAS (c.182A>C;p.Q61P c.35G>A;p.G12D); PTPN11 (c.1472C>T;p.P491L); SF3B1 (c.1997A>C;p.K666T); TET2 (c.1337delT;p.L446*);
95	110	ASXL1 (c.2131dupA;p.T711Nfs*7 c.2133dupT;p.A712Cfs*6); BCOR (c.4021C>T;p.R1341W c.3987C>A;p.C1329*); BCOR (c.4021C>T;p.R1341W c.3987C>A;p.C1329*); CBL (c.1259G>A;p.R420Q); CEBPA (c.878_880delACA;p.N293del); ETV6 (c.1138T>G;p.W380G);
96	111	ASXL1 (c.3426G>C;p.Q1142H); SF3B1 (p.K700E);
97	112	SETBP1 (c.2612T>C;p.I871T); TET2 (c.2599T>C;p.Y867H c.5167C>T;p.P1723S);
98	113	ASXL1 (c.3745A>G;p.M1249V); CUX1 (c.124A>T;p.K42*); SF3B1 (c.2098A>G;p.K700E);
99	114	DNMT3A (c.1126G>A;p.A376T c.918G>A;p.W306*); SF3B1 (c.1873C>T;p.R625C);
100	115	DNMT3A (c.1969G>A;p.V657M); SF3B1 (c.2098A>G;p.K700E);
101	116	DNMT3A (c.746dupA;p.P250Afs*3 c.723_745delGGCCAGCCCTCCTGCTGTGCAGC;p.S243Hfs*2 c.745C>G;p.Q249E c.742C>G;p.Q248E); NOTCH1 (c.7648A>G;p.I2550V); TET2 (c.22C>G;p.H8D);
102	117	None
103	118	CUX1 (c.1573C>G;p.L525V);
104	122	None
105	123	CDKN2A (c.430C>T;p.R144C); CSF3R (c.2488C>T;p.P830S);
106	124	CUX1 (c.4123C>T;p.P1375S); SRSF2 (c.284C>T;p.P95L); TET2 (c.3380A>C;p.Q1127P c.3383delA;p.Y1128Lfs*9 c.3385delG;p.D1129lfs*8 c.3635T>A;p.L1212*);
107	125	ASXL1 (c.3910C>G;p.L1304V);
108	126	DNMT3A (c.1429+1G>A);
109	128	BCOR (c.1005dupC;p.S336Lfs*45); BCOR (c.1005dupC;p.S336Lfs*45); BCORL1 (c.3158A>G;p.K1053R); CSF3R (c.2326C>T;p.Q776*); EZH2 (c.2228G>A;p.G743D); GATA2 (c.383_384dupCC;p.S129Pfs*90);
110	129	RUNX1 (c.939_950del12;p.L313fs); U2AF1 (c.470A>C; Q157P);
111	130	CALR (c.1132G>C;p.E378Q c.1137G>C;p.E379D c.1144delG;p.A382Qfs*48); GATA2 (c.669G>A;p.M223I); SF3B1 (c.1873C>T;p.R625C); TET2 (c.419A>G;p.N140S);
112	131	CEBPA (c.584_589dupACCCGC;p.H195_P196dup); CUX1 (c.1538G>A;p.R513H); DNMT3A (c.1740delC;p.W581Gfs*70);
113	133	DNMT3A (c.2206C>T;p.R736C); TP53 (c.746G>C;p.R249T);

Table S8: Patients TED status, time since diagnosis, transfusion requirements, and whether the data is censored, alive/0, dead/1 at the time of study.

Sl.No.	Unique Patient ID - repeat order	TED status	Time since diagnosis	Censored	Transfusion requirements
1	2-1	TED	86.1	0	Independent
2	3-1	TED	78.83	0	Dependent
3	4-1	TED	36.9	0	Dependent
4	5-1	TED	19.77	1	Dependent
5	6-1	NoTED	42.23	1	Dependent
6	7-1	TED	20.53	0	Dependent
7	9-1	TED	39.3	0	Independent
8	10-1	TED	88.47	0	Independent
9	11-1	TED	103.57	0	Dependent
10	12-1	TED	44.77	1	Dependent
11	13-1	NoTED	67.73	0	Dependent
12	14-1	TED	9.63	0	Independent
13	15-1	TED	81.13	1	Dependent
14	16-1	NoTED	71.83	1	Dependent
15	17-1	TED	94.9	1	Independent
16	18-1	TED	106.7	1	Independent
17	19-1	TED	247.2	0	Independent
18	20-1	TED	48.23	1	Dependent
19	21-1	TED	76.1	1	Independent
20	22-1	TED	129.83	0	Independent
21	24-1	TED	66.53	0	Independent
22	25-1	TED	70	1	Independent
23	26-1	TED	71.33	0	Dependent
24	27-1	TED	27.27	1	Dependent
25	28-1	TED	92	1	Dependent
26	31-1	NoTED	43.6	1	Dependent
27	32-1	TED	33.17	1	Independent
28	34-1	TED	192.47	1	Independent
29	35-1	TED	76.97	0	Dependent
30	36-1	TED	97.3	1	Dependent
31	37-1	NoTED	9.1	1	Dependent
32	38-1	TED	48.87	1	Dependent
33	39-1	TED	85.6	1	Dependent
34	40-1	NoTED	28.7	1	Dependent
35	41-1	NoTED	23.2	1	Dependent
36	42-1	TED	51.17	0	Independent
37	43-1	NoTED	69.93	1	Dependent
38	45-1	TED	28.77	0	Independent
39	46-1	NoTED	69.43	1	Independent
40	47-1	TED	51.87	1	Dependent
41	48-1	TED	218.1	0	Dependent
42	49-1	NoTED	43.63	1	Independent

Sl.No.	Unique Patient ID - repeat order	TED status	Time since diagnosis	Censored	Transfusion requirements
43	50-1	TED	21.6	1	Independent
44	51-1	TED	159	1	Dependent
45	52-1	TED	56.4	0	Independent
46	54-1	TED	92.87	0	Dependent
47	55-1	TED	138.43	0	Dependent
48	56-1	TED	59	0	Independent
49	57-1	NoTED	29	1	Dependent
50	58-1	TED	70.37	1	Independent
51	59-1	TED	89.5	1	Independent
52	60-1	NoTED	29.87	1	Dependent
53	61-1	TED	72.93	0	Dependent
54	62-1	NoTED	63.13	1	Dependent
55	63-1	TED	51.13	0	Dependent
56	65-1	TED	42.7	0	Independent
57	66-1	NoTED	86.77	1	Dependent
58	67-1	TED	59.63	1	Dependent
59	69-1	TED	122.53	0	Dependent
60	70-1	TED	52.93	0	Independent
61	71-1	TED	107.3	0	Dependent
62	72-1	TED	48.63	1	Independent
63	73-1	TED	137.57	1	Dependent
64	74-1	TED	122.6	0	Independent
65	75-1	TED	264.9	0	Dependent
66	76-1	NoTED	54.47	1	Dependent
67	77-1	TED	25.37	1	Independent
68	78-1	TED	67	0	Independent
69	79-1	TED	32.1	1	Independent
70	80-1	NoTED	130.5	0	Dependent
71	81-1	TED	49.83	0	Dependent
72	82-1	TED	83.93	0	Dependent
73	83-1	TED	18.9	1	Dependent
74	84-1	TED	158.87	0	Independent
75	86-1	TED	53.2	0	Independent
76	88-1	TED	105.73	0	Independent
77	89-1	TED	27.9	1	Dependent
78	90-1	TED	103.07	1	Independent
79	91-1	TED	114.53	0	Independent
80	92-1	NoTED	25.03	1	Dependent
81	93-1	TED	102.9	1	Dependent
82	95-1	TED	131.17	1	Dependent
83	97-1	TED	26.1	0	Dependent
84	98-1	TED	59.93	0	Independent
85	99-1	TED	83.23	0	Independent
86	100-1	TED	126.43	1	Dependent

Sl.No.	Unique Patient ID - repeat order	TED status	Time since diagnosis	Censored	Transfusion requirements
87	101-1	NoTED	57.6	0	Independent
88	102-1	TED	13.53	1	Independent
89	103-1	TED	67.93	1	Dependent
90	104-1	TED	128.43	0	Dependent
91	105-1	NoTED	46.23	1	Dependent
92	106-1	TED	35.07	0	Dependent
93	107-1	TED	73.37	0	Independent
94	108-1	NoTED	60.43	1	Dependent
95	110-1	TED	18.67	1	Dependent
96	111-1	TED	78.33	0	Dependent
97	112-1	NoTED	124.93	0	Dependent
98	113-1	TED	48	1	Independent
99	114-1	TED	63.97	1	Dependent
100	115-1	NoTED	67.97	1	Dependent
101	116-1	TED	48.8	0	Dependent
102	117-1	TED	187.87	1	Independent
103	118-1	NoTED	55.77	1	Dependent
104	122-1	TED	43.17	1	Independent
105	123-1	TED	36.87	0	Independent
106	124-1	TED	35.1	1	Dependent
107	125-1	TED	4.1	0	Independent
108	126-1	TED	40.03	0	Independent
109	128-1	TED	205.57	1	Independent
110	129-1	TED	24.63	1	Independent
111	130-1	TED	36.5	1	Independent
112	131-1	NoTED	21.67	0	Dependent
113	133-1	TED	3.97	0	Independent

Table S9: Patient Characteristics and Association with Median Survival

	N	%	Median Survival (months)	(95% CI)	p-value
<b>Age</b>					
< 55 yrs.	5	4.4	70	70.0 to 71.8	0.6337
55-64 yrs.	14	10.6	-	-	
65-74 yrs.	49	43.3	81.13	67.9 to 131.1	
≥ 75 yrs	45	39.8	85.6	48.6 to 126.4	
Total	113				
<b>Sex</b>					
Female	46	40.7	85.6	48.8 to 205.5	0.9382
Male	67	59.3	92	69.4 to 126.4	
Total					
<b>WHO 2008</b>					
RA	9	8	103	63.1 to 103.0	<b>0.002</b>
RCMD	11	9.8	-	-	
RARS	59	52.6	86.7	69.4 to 126.4	
RAEB-1	15	13.3	46.2	27.2 to 70.0	
RAFEB-2	13	11.6	48.6	28.7 to 205.5	
RARS-T	5	4.4	-	-	
Total	112				
<b>IPSS Risk Categories</b>					
Low	29	32.2	131.1	81.1 to 192.4	<b>0.0154</b>
Int-1	44	48.8	94.9	60.4 to 126.3	
Int-2	11	12.2	35.1	25.3 to 70.0	
high	6	6.6	25	23.2 to 205.5	
Total	90				
<b>Karyotype (IPSS)</b>					
Good	70	66	94.9	76.1 to 131.1	<b>0.0219</b>
intermediate	24	22.6	67.9	48.6 to 205.5	
Poor	12	11.3	43.6	25.3 to 70.0	
Total	106				
<b>IPSS-R Risk Categories</b>					
Very Low	19	21.1	137.5	81.1 to 137.5	<b>0.0026</b>
Low	32	35.5	103	85.6 to 187.8	
Intermediate	21	23.3	60.4	44.7 to 159.0	
High	10	11.1	27.9	23.2 to 97.3	
Very High	8	8.8	25.3	19.7 to 205.5	
Total	90				
<b>Karyotype (IPSSR)</b>					
Very good	3	3	137.5	21.6 to -	0.075
Good	69	63	94.9	71.1 to 131.1	
Intermediate	22	21	63.1	48.6 to 205.5	
Poor	5	4	67.9	13.5 to 67.9	
Very poor	7	9	43.6	19.7 to 70.0	
Total	106				

	N	%	Median Survival (months)	(95% CI)	p-value
<b>Blast</b>					
≤ 2	65	59.6	126.4	89.5 to 192.4	<b>0.0002</b>
2.1-4.9	15	13.7	85.6	42.2 to 131.1	
5-10	19	17.4	54.4	44.7 to 70.3	
> 10	10	9.1	35.1	25.0 to 205.5	
Total	109				
<b>Hemoglobin (g/dL)</b>					
<8	13	11.9	205.5	102.9 to -	0.0899
8-9.9	48	44	67.9	54.4 to 97.3	
≥ 10	48	44	89.5	69.9 to 187.8	
Total	109				
<b>Absolute Neutrophil Count (109/L)</b>					
< 0.8	19	18.8	70	29.0 to 97.3	0.2058
≥ 0.8	82	81.1	92	69.9 to 126.4	
Total	101				
<b>Platelets (109/L)</b>					
< 50	22	20.1	97.3	35.1 to 187.8	0.6999
50-99	23	21.1	81.1	60.4 to 106.7	
≥ 100	64	58.8	85.6	67.9 to 131.1	
Total	109				
<b>TED</b>					
TED-positive	89	78.7	103	85.6 to 137.5	<b>0.0001</b>
TED-negative	24	21.3	55.7	43.6 to 69.4	
Total	113				

Table S10: OS among various IPSS-R categories

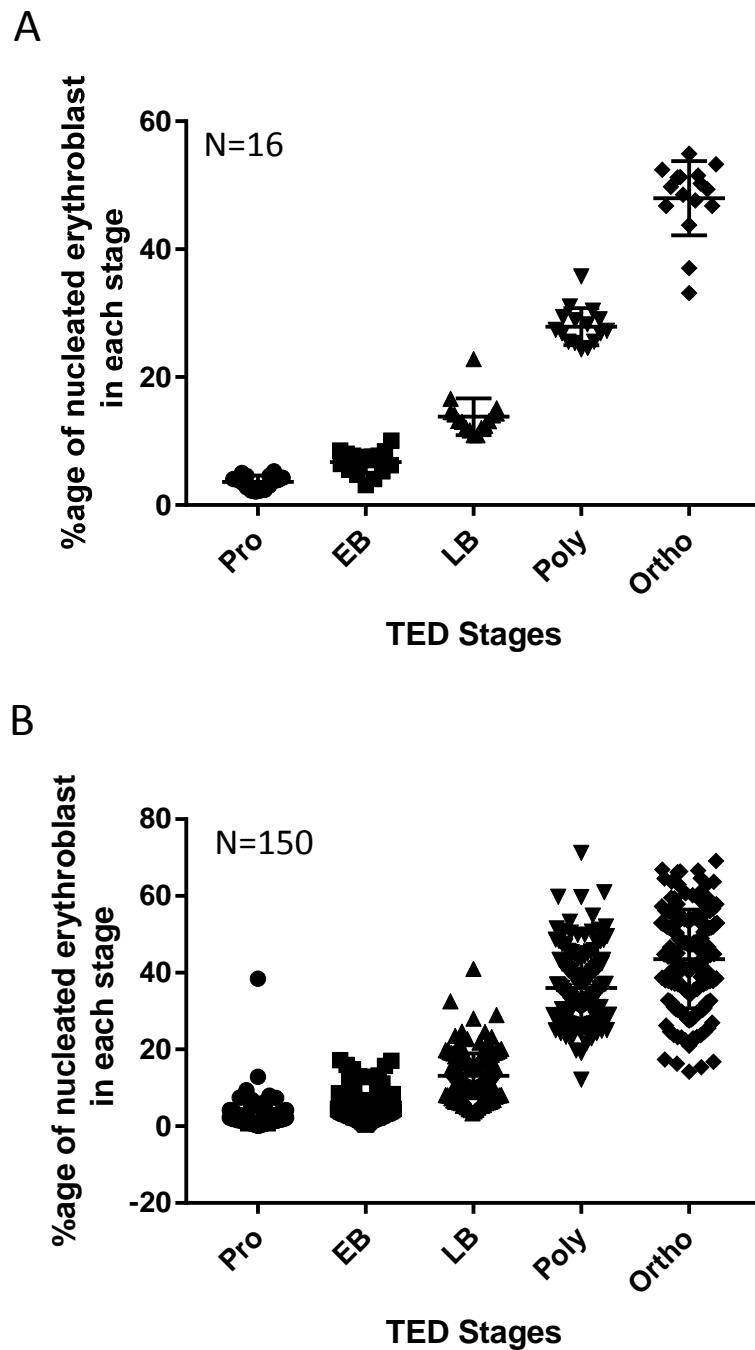
Sl.No.	IPSS-R Category	Median Survival (months)		P value
		TED	No TED	
1	Very Low, Low, Intermediate	126.4	55.7	<0.0001
2	Very Low, Low	126.4	69.9	0.0278
3	High, Very High	48.6	23.2	0.0059
4	Intermediate, High, Very High	70.0	29.8	0.0062

Table S11 Hazard Ratios for death in a univariate analysis

Factor	HR	95% CI of HR	P
TED	3.4	1.9 to 6.1	<0.0001
ME Ratio	3.1	1.5 to 6.3	0.001
IPSSR	1.4	1.1 to 1.8	0.0006
CEBPA	5.1	1.2 to 21.7	0.0264
CUX1	4.1	1.5 to 10.8	0.0035
IDH2	12.2	2.5 to 57.9	0.0016
NRAS	5.3	1.6 to 17.6	0.0061
RUNX1	2.4	1.2 to 4.8	0.0105
SRSF2	3.1	1.6 to 6.0	0.0005
STAG2	4.3	1.7 to 11.1	0.0021

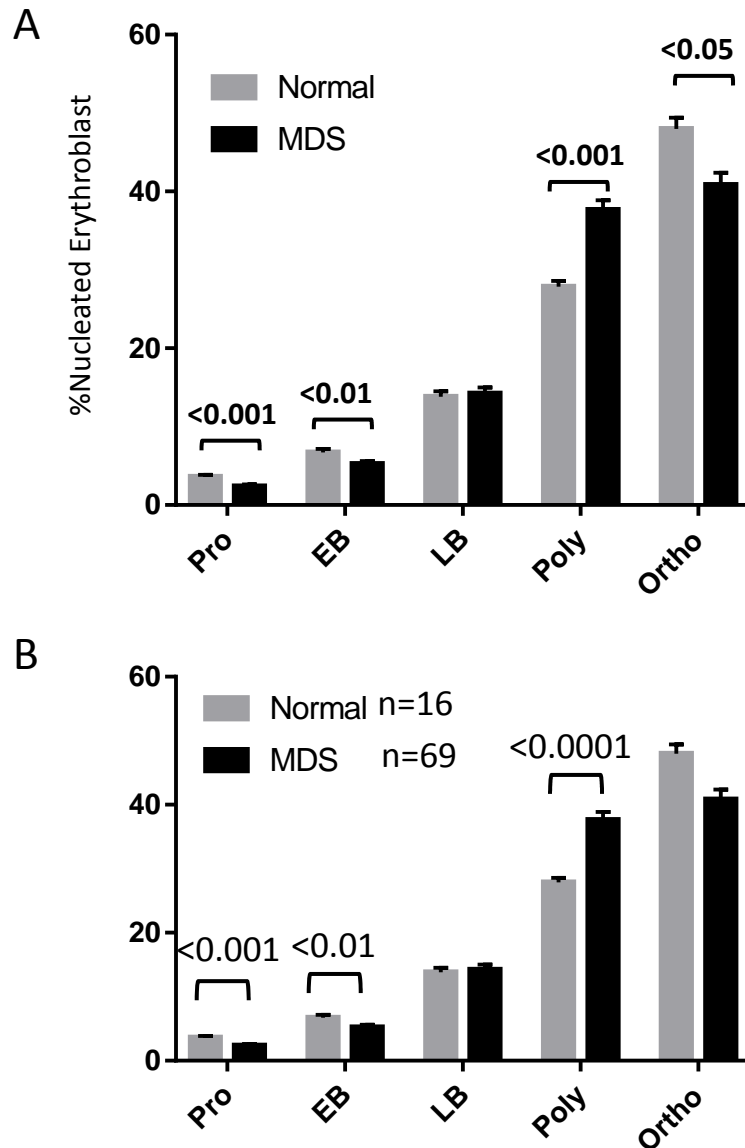


Figure S1



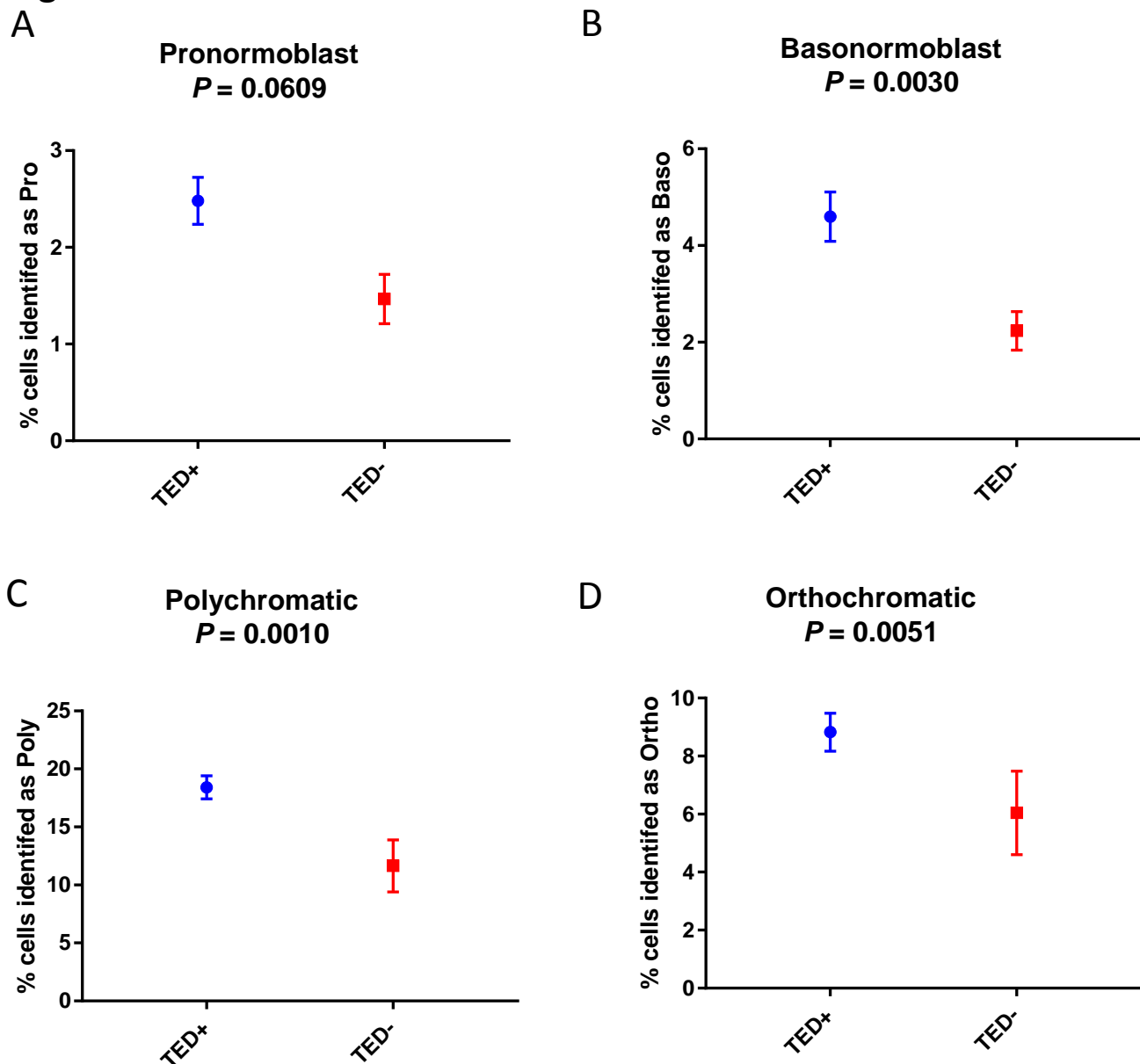
**Figure S1: TED is abnormal in MDS samples:** A scatter plot showing percentage of nucleated erythroid cells in each stage of TED. **A)** normal (n=16), **B)** MDS/MDS-MPN (RARS-T) samples (n=150).

Figure S2



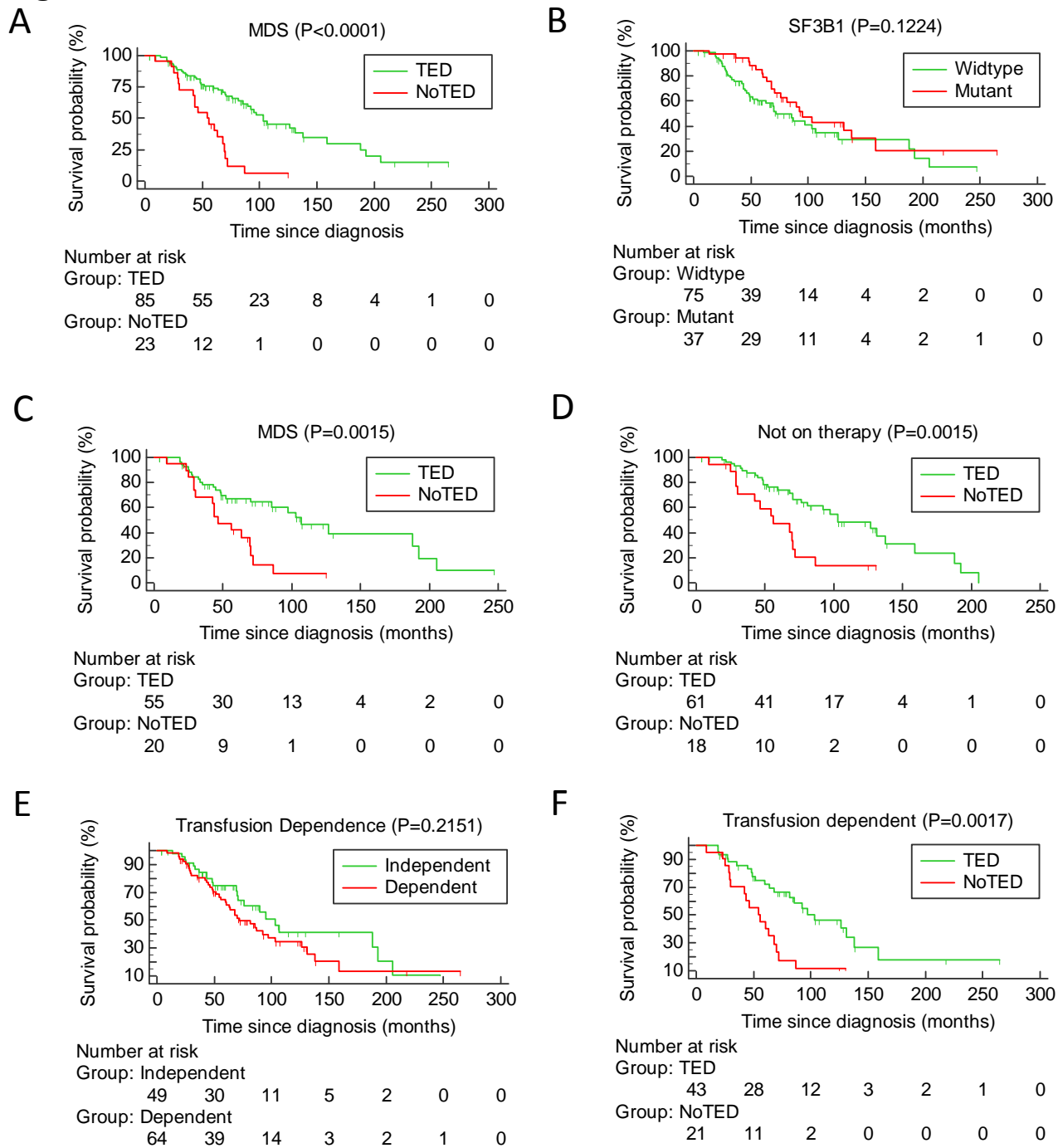
**Figure S2: TED is abnormal in MDS samples:** A bar diagram showing percentage of nucleated erythroid cells in each stage of TED. **A)** When compared to normal (n=16), MDS samples (n=85) were characterized by a significant decrease in percentage of cells in Pro and EB stages and a significantly abnormal increase of cells in poly stage, and a decrease in ortho stage. **B)** A subset of MDS patients (n=69), after removing inconsistent TED on repeat sampling at other times, was compared with normal. We observed a significant decrease in percentage of cells in Pro and EB stages and a significantly abnormal increase of cells in poly stage. Data in bar diagram is presented as mean+S.E.M. Each TED stage was compared between normal and MDS samples using unpaired, two-tailed, non-parametric t-test (Mann Whitney).

Figure S3



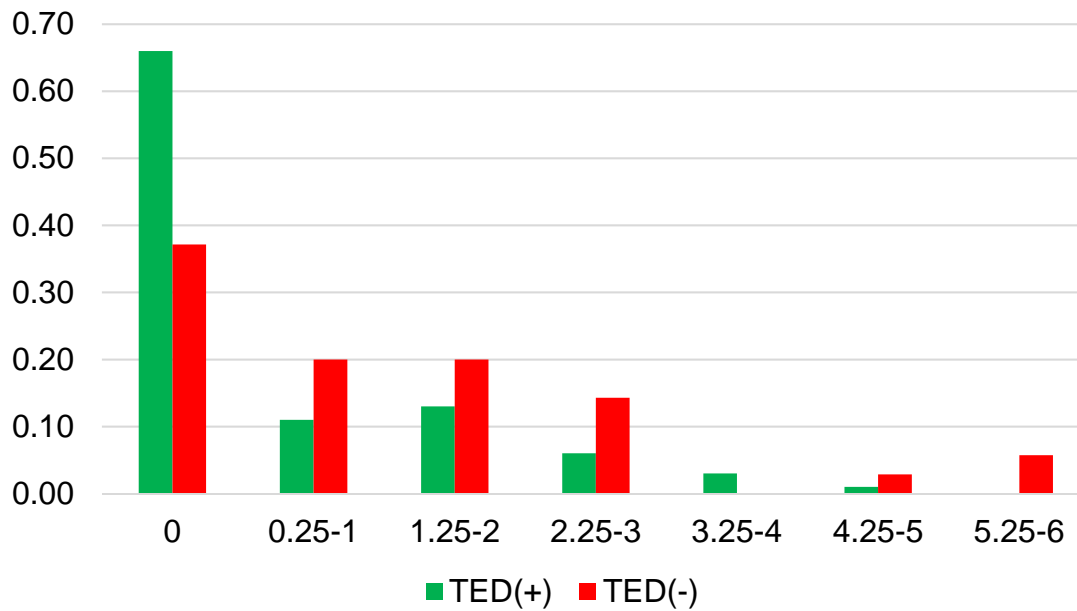
**Figure S3:** Percentage of various erythroid lineage cells from morphologic criteria used by pathologist, pronormoblast (A), basonormoblast (B), polychromatic (C), and orthochromatic (D), undergoing terminal erythroid differentiation, as identified based on their morphology and reported in the manual differential count by pathologist, were analyzed using two-tailed unpaired Mann-Whitney test. There was significant different with all the four cells types low in TED-negative (n=17) group compared to TED-positive (n=85).

**Figure S4**



**Figure S4:** Kaplan-Meier survival curves were generated to calculate overall survival (OS). Log-rank test was used to compare the curves. The tables below the curves indicate the number of patients at risk in each group. **A)** There was a significant difference in OS between TED and NoTED MDS patients excluding RARS-T ( $P < 0.0001$ ). **B)** OS was different, mutant showing better survival than wildtype, but the difference was not significant ( $P = 0.1224$ ). **C)** There was a significant difference in OS between TED and NoTED MDS patients excluding SF3B1 mutated patients ( $P = 0.0015$ ). **D)** We also found a difference in OS between patient who were not on any therapy at sample collection ( $P = 0.0015$ ). **E)** OS was different between transfusion dependent and independent patients but it was not significant ( $P = 0.2151$ ), **F)** OS was significantly different between TED and noTED patients who were transfusion dependent at sample collection ( $P = 0.0017$ ).

Figure S5



**Figure S5:** Transfusion rate (units/month) between TED and noTED patients. Twice as many patients who were TED-negative were transfusion dependent compared to TED-positive. Also, the transfusion requirements of TED-negative patients were more than TED-positive.