Supplemental Online Content

Brown PA, Ji L, Xu X, Devidas M, Hogan LE, Borowitz MJ, Raetz EA, Zugmaier G, Sharon E, Bernhardt MB, Terezakis SA, Gore L, Whitlock JA, Pulsipher MA, Hunger SP, Loh ML. Effect of Post–reinduction Therapy Consolidation With Blinatumomab vs Chemotherapy on Disease-Free Survival in Children, Adolescents, and Young Adults With First Relapse of B-Cell Acute Lymphoblastic Leukemia. *JAMA.* Published online March 2, 2021. doi:10.1001/jama.2021.0669

This supplemental material has been provided by the authors to give readers additional information about their work.

Supplemental eTable 1. Reinduction treatment

Block 1 (Weeks 1-4)

Drug	Dose	Route	Days
Mitoxantrone	10 mg/m^2/dose	IV	1, 2
Dexamethasone	10 mg/m^2/dose twice daily	PO or IV	1 - 5, 15 - 19
Vincristine	1.5 mg/m^2/dose (max 2mg)	IV	1, 8, 15, 22
Pegaspargase[a]	2500 IU/m^2/dose	IV	3, 17
Methotrexate for all patients	Age-based	IT	1
Methotrexate for CNS1[b] ONLY	Age-based	IT	8
Methotrexate for CNS2[b] ONLY	Age-based	IT	8, (15, 22)[d]
Triple IT[c] for CNS3[b] and isolated CNS relapse ONLY	Age-based	IT	8, 15, 22

[a] For hypersensitivity, 6 injections of asparaginase Erwinia chrysanthemi may be substituted for each dose of pegaspargase

[b] CNS1: CSF WBC < 5 per microliter, no blasts on cytospin; CNS2: CSF WBC < 5 per microliter, blasts present on cytospin; CNS3: CSF WBC ≥ 5 per microliter, blasts present on cytospin, or clinical/radiographic signs of central nervous leukemia

[c] Triple Intrathecal therapy (Triple IT): methotrexate, hydrocortisone, and cytarabine

[d] Methotrexate dose for Days 15 and 22 only for CNS2 subjects who do not have clear CSF samples in weeks 1 & 2.

Supplemental eTable 2. Randomized treatment, blinatumomab group

Blinatumomab Cycle 1 (5 weeks)

Drug	Dose	Route	Days
Blinatumomab	15 micrograms/m^2/day	IV, 28 day Continuous Infusion	1 - 28, followed by 1 week rest period
Dexamethasone	5 mg/m^2/dose (max 20 mg)	PO or IV	1[a]
Methotrexate for CNS1/2 ONLY	Age-based	IT	15, 29
Triple IT for CNS3 and isolated CNS relapse ONLY[b]	Age-based	IT	15, 29

[a] Given 30-60 minutes prior to start of blinatumomab infusion

[b] Triple Intrathecal therapy (Triple IT) is made up of methotrexate, hydrocortisone, and cytarabine

Blinatumomab Cycle 2 (5 weeks)

Drug	Dose	Route	Days
Blinatumomab	15 micrograms/m^2/day	IV, 28 day Continuous Infusion	1 - 28, followed by 1 week rest period
Methotrexate for CNS1/2 ONLY	Age-based	IT	8, 29
Triple IT for CNS3 and isolated CNS relapse ONLY[a]	Age-based	IT	8, 29

[a] Triple Intrathecal therapy (Triple IT) is made up of methotrexate, hydrocortisone, and cytarabine

Supplemental eTable 3. Randomized treatment, chemotherapy group

Block 2 (4 weeks)

Drug	Dose	Route	Days
Dexamethasone	3 mg/m^2/dose twice daily	PO or IV	1 - 5
Vincristine	1.5 mg/m^2/dose (max 2mg)	IV	1
Methotrexate for CNS1/2 ONLY	Age-based	IT	8
Triple IT for CNS3 and isolated CNS relapse ONLY[a]	Age-based	IT	8, 22
Methotrexate	1000 mg/m^2/dose	IV over 36 hours	8
Leucovorin	15 mg/m^2/dose every 6 hours	IV or PO	10, 11
Pegaspargase[b]	2500 IU/m^2/dose	IV	9 or 10
Cyclophosphamide	440 mg/m^2/dose	IV	15 - 19
Etoposide	100 mg/m^2/dose	IV	15 - 19

[a] Triple Intrathecal therapy (Triple IT) is made up of methotrexate, hydrocortisone, and cytarabine

[b] For hypersensitivity, 6 injections of asparaginase Erwinia chrysanthemi may be substituted for each dose of pegaspargase

Block 3 (4 weeks)

Drug	Dose	Route	Days
Dexamethasone	3 mg/m^2/dose twice daily	PO or IV	1 - 5
Vincristine	1.5 mg/m^2/dose (max 2mg)	IV	1
Cytarabine	1000 mg/m^2/dose every 12 hours	IV over 3 hours	1, 2, 8, 9
Asparaginase Erwinia	25,000 IU/m^2/dose	IM or IV	2, 4, 9, 11, 23
Methotrexate	1000 mg/m^2/dose	IV over 36 hours	8
Leucovorin	15 mg/m^2/dose every 6 hours	IV or PO	10, 11
Methotrexate for all patients	Age-based	IT	1
Methotrexate for CNS1/2 ONLY	Age-based	IT	22
Triple IT for CNS3 and isolated CNS relapse ONLY[a]	Age-based	IT	22

[a] Triple Intrathecal therapy (Triple IT) is made up of methotrexate, hydrocortisone, and cytarabine.

Supplemental eTable 4. Non-randomized treatment, early treatment failure group

Blinatumomab Salvage Cycle 1 (5 weeks)

Drug	Dose	Route	Days
Blinatumomab	5 micrograms/m^2/day	IV, Continuous Infusion	1 - 7
Blinatumomab	15 micrograms/m^2/day	IV, Continuous Infusion	8 – 28, followed by 1 week rest period
Dexamethasone	5 mg/m^2/dose (max 20 mg)	PO or IV	1, 8[a]
Methotrexate	Age-based	IT	15

[a] Given 30-60 minutes prior to start of blinatumomab infusion (day 1) and increase in dose (day 8)

Blinatumomab Salvage Cycle 2 (5 weeks)

Drug	Dose	Route	Days
Blinatumomab	15 micrograms/m^2/day	IV, 28 day Continuous Infusion	1 - 28, followed by 1 week rest period
Methotrexate	Age-based	IT	8, 29

Supplemental eTable 5. MRD transitions

Transition	Before[a]	After[a]	All Randomized Patients (n=208)		
			Blinatumomab (n=105)	Chemotherapy (n=103)	P[b]
End reinduction to end cycle 1	**Pos**	**Neg**	59 (76%)	13 (18%)	<0.001
		Pos	11 (14%)	48 (68%)	
		N.D.	8 (10%)	10 (14%)	
	Neg	**Neg**	20 (77%)	20 (65%)	0.31
		Pos	4 (15%)	2 (6%)	
		N.D.	2 (8%)	9 (29%)	
	N.D.	**Neg**	0	0	-
		Pos	0	0	
		N.D.	1 (100%)	1 (100%)	
End reinduction to end cycle 2	**Pos**	**Neg**	5 (33%)	20 (40%)	0.64
		Pos	3 (20%)	10 (20%)	
		N.D.	7 (47%)	20 (40%)	
	Neg	**Neg**	63 (80%)	12 (36%)	<0.001
		Pos	10 (13%)	3 (9%)	
		N.D.	6 (8%)	18 (55%)	
	N.D.	**Neg**	1 (9%)	1 (5%)	1
		Pos	1 (9%)	3 (15%)	
		N.D.	9 (82%)	16 (80%)	

[a] Neg: MRD < 0.01%; Pos: MRD ≥ 0.01%; or MRD < 0.1% with sensitivity 1 in 1000; N.D.: No data

[b] p-values are from Chi-squared tests of differences between blinatumomab and chemotherapy in the proportion of patients with MRD-negative vs. other (MRD-positive or no data)

Supplemental eTable 6. CD19 expression for blinatumomab patients with recurrent MRD

	MRD %			
Patient	**End Reinduction**	**End Cycle 1**	**End Cycle 2**	**CD19 Expression[b]**
1	0.3%	<0.01%	<0.1%*	No data[a]
2	0.12%	<0.01%	49%	+
3	0.22%	<0.01%	0.054%	+
4	0.25%	<0.01%	0.01%	+
5	0.024%	<0.01%	0.014%	-
6	0.61%	<0.01%	0.11%	+
7	0.026%	<0.01%	0.035%	-
8	5.4%	<0.01%	0.69%	-
9	<0.01%	<0.01%	0.2%	+
10	0.036%	<0.01%	54.3%	-

[a] MRD <0.1% with sensitivity 1 in 1000 (CD19 expression data not available due to lack of events)

[b] +: CD19 expressed (no antigen loss); -: CD19 not expressed (antigen loss)

Supplemental eTable 7. Adverse event summary (cumulative for cycle 1 and cycle 2)

	Cumulative			
	Blinatumomab (n=102)		Chemotherapy (n=97)	
	Any Grade	Grade ≥3[a]	Any Grade	Grade ≥3[a]
Patients with any Adverse Event[b]	99 (97.1%)	83 (81.4%)	91 (93.8%)	90 (92.8%)
Anemia	80 (78.4%)	18 (17.6%)	66 (68%)	60 (61.9%)
White blood cell decreased	75 (73.5%)	35 (34.3%)	61 (62.9%)	59 (60.8%)
Alanine aminotransferase increased	73 (71.6%)	16 (15.7%)	65 (67%)	40 (41.2%)
Neutrophil count decreased	63 (61.8%)	48 (47.1%)	62 (63.9%)	62 (63.9%)
Fever	58 (56.9%)	8 (7.8%)	37 (38.1%)	10 (10.3%)
Aspartate aminotransferase increased	56 (54.9%)	9 (8.8%)	54 (55.7%)	16 (16.5%)
Hypoalbuminemia	52 (51%)	0 (0%)	47 (48.5%)	7 (7.2%)
Lymphocyte count decreased	51 (50%)	41 (40.2%)	35 (36.1%)	33 (34%)
Platelet count decreased	45 (44.1%)	10 (9.8%)	68 (70.1%)	65 (67%)
Hyperglycemia	44 (43.1%)	3 (2.9%)	31 (32%)	14 (14.4%)
Hypokalemia	38 (37.3%)	7 (6.9%)	50 (51.5%)	24 (24.7%)
Hypocalcemia	34 (33.3%)	2 (2%)	41 (42.3%)	6 (6.2%)
Infection[c,d]	28 (27%)	15 (15%)	68 (70%)	63 (65%)
Vomiting	24 (23.5%)	1 (1%)	27 (27.8%)	6 (6.2%)
Hypophosphatemia	22 (21.6%)	0 (0%)	21 (21.6%)	7 (7.2%)
Hypotension	20 (19.6%)	4 (3.9%)	17 (17.5%)	11 (11.3%)
Blood bilirubin increased	18 (17.6%)	2 (2%)	38 (39.2%)	8 (8.2%)
Anorexia	14 (13.7%)	4 (3.9%)	19 (19.6%)	14 (14.4%)
GGT increased	12 (11.8%)	5 (4.9%)	10 (10.3%)	6 (6.2%)
Febrile neutropenia[c]	6 (5.9%)	5 (4.9%)	56 (57.7%)	56 (57.7%)
Mucositis oral[c]	5 (4.9%)	1 (1%)	50 (51.5%)	27 (27.8%)
Sepsis[c]	2 (2%)	2 (2%)	26 (26.8%)	26 (26.8%)
Typhlitis	0 (0%)	0 (0%)	5 (5.2%)	5 (5.2%)
Blinatumomab-Related Adverse Event				
Cytokine Release Syndrome[e]	22 (22%)	1 (1%)	n/a	n/a
Encephalopathy	15 (15%)	4 (4%)	n/a	n/a
Seizure	5 (5%)	1 (1%)	n/a	n/a

[a] Grading was performed according to NCI Common Terminology Criteria for Adverse Events version 4.0. Criteria range from 1 to 5 with 3 being severe or medically significant but not immediately life-threatening, 4 being life-threatening and indicating urgent intervention, and 5 being death. Criteria are assigned by the treating physician and certain serious adverse events as defined in the protocol are reported as per federal guidelines.

[b] This table includes only adverse events that occurred with a grade of 3 or greater at a frequency of 5% or greater in at least one cycle for either group.

[c] These four adverse events of special interest were identified based on their known association with life-threatening complications.

[d] "Infection" includes catheter-related, lung, skin, upper respiratory, and urinary tract infections.

[e] Cytokine Release Syndrome is a toxicity caused by rapid release of cytokines into the blood known to occur with immunotherapies including blinatumomab. Signs and symptoms of cytokine release syndrome include fever, nausea, headache, rash, tachycardia, hypotension, and tachypnea

Supplemental eTable 8: MRD, transplant rates and events according to risk groups

Time Point	Minimal Residual Disease[a]	High Risk: Bone Marrow (n=118) Blinatumomab (n=59)	High Risk: Bone Marrow (n=118) Chemotherapy (n=59)	P[b]	Intermediate Risk: Bone Marrow (n=70) Blinatumomab (n=36)	Intermediate Risk: Bone Marrow (n=70) Chemotherapy (n=34)	P[b]	High Risk: Isolated Extramedullary (n=20) Blinatumomab (n=10)	High Risk: Isolated Extramedullary (n=20) Chemotherapy (n=10)	P[b]
End Reinduction	**Negative**	17 (29%)	22 (37%)	0.33	0	0	-	9 (90%)	9 (90%)	1
	Positive	41 (69%)	36 (61%)		36 (100%)	34 (100%)		1 (10%)	1 (10%)	
	No data[e]	1 (2%)	1 (2%)		0	0		0	0	
End Cycle 1	**Negative**	37 (63%)	23 (39%)	0.01	33 (92%)	4 (12%)	<0.001	9 (90%)	6 (60%)	0.30
	Positive	14 (24%)	22 (37%)		1 (3%)	27 (79%)		0	1 (10%)	
	No data[e]	8 (14%)	14 (24%)		2 (6%)	3 (9%)		1 (10%)	3 (30%)	
End Cycle 2	**Negative**	29 (49%)	11 (19%)	<0.001	33 (92%)	17 (50%)	<0.001	7 (70%)	5 (50%)	0.65
	Positive	14 (24%)	12 (20%)		0	3 (9%)		0	1 (10%)	
	No data[e]	16 (27%)	36 (61%)		3 (8%)	14 (41%)		3 (30%)	4 (40%)	
Hematopoietic stem cell transplant status[c]										
	Transplant	35 (59%)	19 (32%)	0.003	32 (89%)	19 (56%)	.003	7 (70%)	6 (60%)	1
	No transplant	24 (41%)	40 (68%)		4 (11%)	15 (44%)		3 (30%)	4 (40%)	
First Event Type										
	Late treatment failure[d]	1 (3%)	4 (10%)		0	5 (45%)		0	0	
	Relapse	28 (78%)	23 (58%)		4 (50%)	3 (27%)		3 (75%)	6 (75%)	
	Death	7 (19%)	13 (33%)		4 (50%)	3 (27%)		1 (25%)	2 (25%)	
	Total number of events	36	40		8	11		4	8	

[a] Negative: MRD < 0.01%; Positive: MRD ≥ 0.01%; or MRD < 0.1% with sensitivity 1 in 1000

[b] p-values evaluating the association between MRD response and treatment groups, or between transplant and treatment groups, are based on Pearson's Chi-squared tests.

[c] Transplant: received transplant without intervening non-protocol therapy; No transplant: did not receive transplant, or received non-protocol therapy prior to transplant

[d] Late treatment failure: ≥5% blasts in marrow after cycle 1

[e] No data: Patients who did not submit a sample at indicated time point, due to death, relapse, or removal from protocol therapy

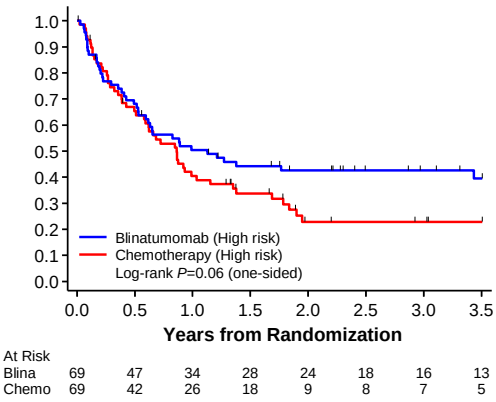
Supplemental eTable 9: Baseline characteristics of randomized patients by age group

Patient Characteristics	AYA: Ages 18-30 Years			Non-AYA: Ages <18 Years		
	Blinatumomab (n=15)	Chemotherapy (n=18)	P value	Blinatumomab (n=90)	Chemotherapy (n=85)	P value
Age at Enrollment (years)			*0.90*			*0.70*
Median (1st quartile, 3rd quartile)	*20 (18-24)*	*20 (19-24)*		*8.5 (5, 14)*	*7 (5, 12)*	
1-9				55 (61.1%)	55 (64.7%)	
10-12				10 (11.1%)	11 (12.9%)	
13-17				25 (27.8%)	19 (22.4%)	
18-20	8 (53.3%)	10 (55.6%)				
21-30	7 (46.7%)	8 (44.4%)				
Age at Initial Diagnosis (years)			*0.03*			*0.61*
Median (1st quartile, 3rd quartile)	*15 (15, 17)*	*18 (16, 22)*		*5 (3, 10)*	*4 (2, 8)*	
<1				7 (7.8%)	10 (11.8%)	
1-9				56 (62.2%)	55 (64.6%)	
10-12	0	1(5.6%)		16 (17.8%)	10 (11.8%)	
13-17	13 (86.7%)	8 (44.4%)		11 (12.2%)	10 (11.8%)	
18-30	2 (13.3%)	9 (50.0%)				
Gender			*0.17*			*0.33*
Female	8 (53.3%)	5 (27.8%)		40 (44.4%)	44 (51.8%)	
Male	7 (46.7%)	13 (72.2%)		50 (55.6%)	41 (48.2%)	
Race (n=172)			*0.63*			*0.14*
American Indian or Alaska Native				2 (2.7%)	0	
Asian				4 (5.5%)	4 (5.4%)	
Black or African American	1 (10.0%)	3 (20.0%)		6 (8.2%)	15 (20.3%)	
White	9 (90.0%)	12 (80.0%)		60 (82.2%)	54 (73.0%)	
Multiple Races				1 (1.4%)	1 (1.4%)	
Ethnicity (n=195)			*0.41*			*0.96*
Hispanic or Latino	8 (53.3%)	7 (38.9%)		28 (34.1%)	27 (33.7%)	
Not Hispanic or Latino	7 (46.7%)	11 (61.1%)		54 (65.9%)	53 (66.3%)	
Site of Relapse, Time from Diagnosis to Relapse, Minimal Residual Disease (MRD) after Reinduction			*0.03*			*0.65*
Marrow, ≥36 months	10 (66.7%)	4 (22.2%)		26 (28.9%)	30 (35.3%)	
Marrow, 18-36 months	4 (26.7%)	5 (27.8%)		37 (41.1%)	36 (42.4%)	
MRD≥0.1%	*1*	*3*		*18*	*16*	
MRD<0.1%	*3*	*2*		*19*	*19*	
Unknown	*0*	*0*		*0*	*1*	
Marrow, <18 months	1 (6.7%)	7 (38.9%)		17 (18.9%)	11 (12.9%)	
MRD≥0.1%	*0*	*4*		*8*	*4*	
MRD<0.1%	*1*	*3*		*8*	*7*	
Unknown	*0*	*0*		*1*	*0*	
Isolated Extramedullary, <18 months	0	2 (11.1%)		10 (11.1%)	8 (9.4%)	
Risk Group Assignment after Reinduction			*0.02*			*0.36*
High Risk	5 (33.3%)	14 (77.8%)		64 (71.1%)	55 (64.7%)	
Intermediate Risk	10 (66.7%)	4 (22.2%)		26 (28.9%)	30 (35.3%)	
Cytogenetic Group			*0.39*			*0.48*
Favorable	2 (14.3%)	1 (6.3%)		19 (25.0%)	15 (20.0%)	
• *ETV6-RUNX1*	*1*	*0*		*11*	*8*	
• *Hyperdiploid with +4, +10*	*1*	*1*		*8*	*7*	
Unfavorable	1 (7.1%)	0		6 (7.9%)	10 (13.3%)	
• *KMT2A-rearranged*	*1*	*0*		*6*	*9*	
• *Hypodiploid*	*0*	*0*		*0*	*1*	

Patient Characteristics	AYA: Ages 18-30 Years			Non-AYA: Ages <18 Years		
	Blinatumomab (n=15)	Chemotherapy (n=18)	P value	Blinatumomab (n=90)	Chemotherapy (n=85)	P value
Other	11 (78.6%)	15 (93.8%)		51 (67.1%)	50 (66.7%)	
Unknown	1	2		14	10	

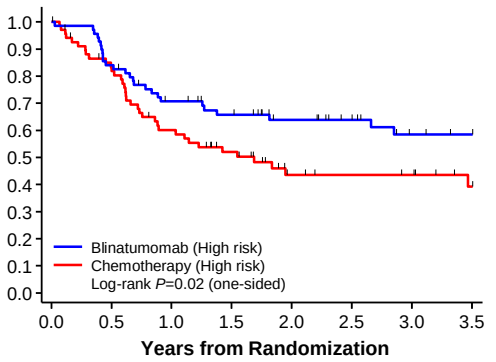
Supplemental eFigure

A: DFS, High Risk



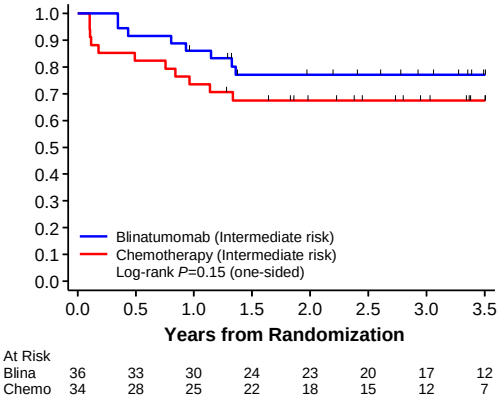
At Risk								
Blina	69	47	34	28	24	18	16	13
Chemo	69	42	26	18	9	8	7	5

B: OS, High Risk



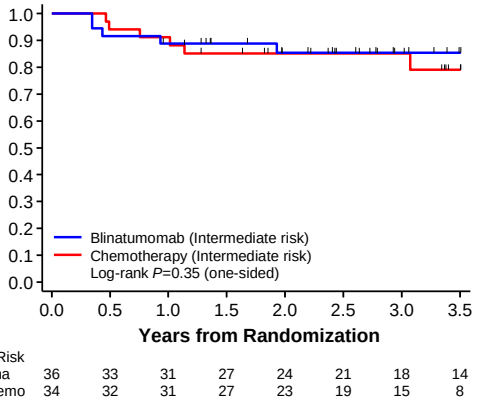
At Risk								
Blina	69	58	46	40	32	26	20	18
Chemo	69	54	38	29	17	15	14	9

C: DFS, Intermediate Risk



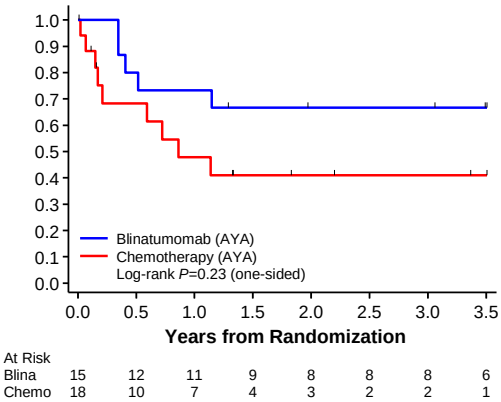
At Risk								
Blina	36	33	30	24	23	20	17	12
Chemo	34	28	25	22	18	15	12	7

D: OS, Intermediate Risk



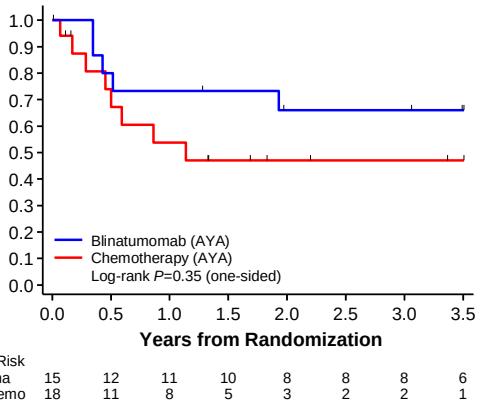
At Risk								
Blina	36	33	31	27	24	21	18	14
Chemo	34	32	31	27	23	19	15	8

E: DFS, AYA patients (Ages 18-30 Years)



At Risk								
Blina	15	12	11	9	8	8	8	6
Chemo	18	10	7	4	3	2	2	1

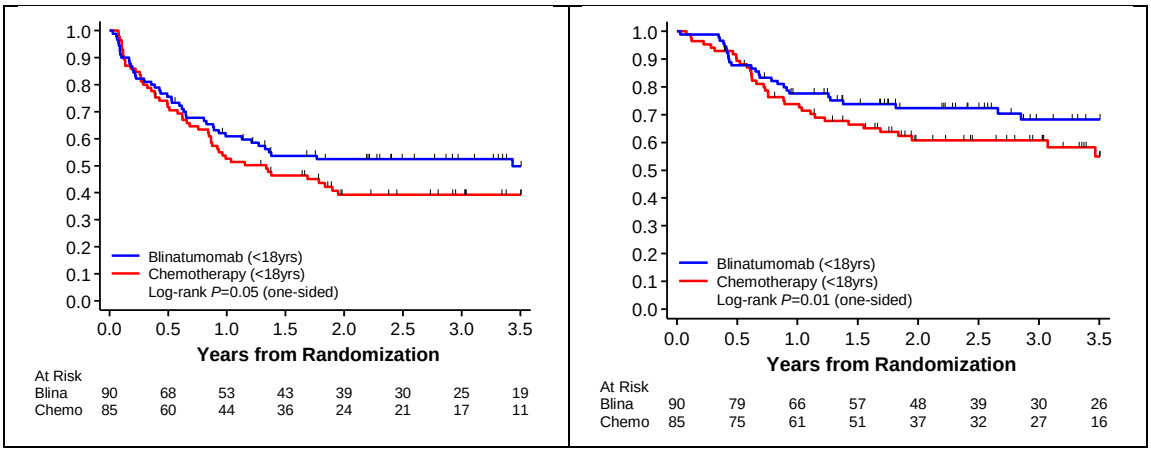
F: OS, AYA patients (Ages 18-30 Years)



At Risk								
Blina	15	12	11	10	8	8	8	6
Chemo	18	11	8	5	3	2	2	1

G: DFS, non-AYA patients (Ages <18 Years)

H: OS, non-AYA patients (Ages <18 Years)



eFigure 1. Survival plot for subgroups. Comparison of blinatumomab group (blue solid line) vs chemotherapy group (red dashed line) for probability of disease-free survival (Panels A, C, E, G) and overall survival (Panels B, D, F, H) from time of randomization for indicated subgroups. High risk: (A) 2-year disease-free survival was 42.6% for blinatumomab vs 22.9% for chemotherapy, hazard ratio for disease progression or mortality (95% confidence interval) 0.72 (0.47, 1.1); (B) 2-year overall survival was 63.8% for blinatumomab vs 43.6% for chemotherapy, hazard ratio for mortality 0.59 (0.36, 0.98). Intermediate risk: (C) 2-year disease-free survival was 77.1% for blinatumomab vs 67.5% for chemotherapy, hazard ratio for disease progression or mortality 0.62 (0.25, 1.5); (D) 2-year overall survival was 85.5% for blinatumomab vs 85.2% for chemotherapy, hazard ratio for mortality 0.79 (0.24, 2.6). AYA (Ages 18-30 years): (E) 2-year disease-free survival was 66.7% for blinatumomab vs 41% for chemotherapy, hazard ratio for disease progression or mortality 0.62 (0.17, 2.2); (F) 2-year overall survival was 66% for blinatumomab vs 47.1% for chemotherapy, hazard ratio for mortality 0.78 (0.20, 3.0). Non-AYA (Ages <18 years): (G) 2-year disease-free survival was 52.4% for blinatumomab vs 39.2% for chemotherapy, hazard ratio for disease progression or mortality 0.70 (0.46, 1.1); (H) 2-year overall survival was 72.3% for blinatumomab vs 60.8% for chemotherapy, hazard ratio for mortality 0.54 (0.32, 0.92).

Supplemental eTable 10: Baseline characteristics for early treatment failure patients

Patient Characteristics	All (n=45)	Not receiving salvage therapy (n=23)	Received salvage therapy (n=22)
Age at Enrollment (years)			
Median (1st quartile, 3rd quartile)	*12 (6, 17)*	*9 (5, 15)*	*15 (10, 19)*
1-9	18 (40.0%)	13 (56.5%)	5 (22.7%)
10-12	5 (11.1%)	2 (8.7%)	3 (13.6%)
13-17	12 (26.7%)	5 (21.7%)	7 (31.8%)
18-20	4 (8.9%)	1 (4.3%)	3 (13.6%)
21-30	6 (13.3%)	2 (8.7%)	4 (18.2%)
Age at Initial Diagnosis (years)			
Median (1st quartile, 3rd quartile)	*10 (5, 15)*	*6 (3, 13)*	*14 (8, 17)*
<1	2 (4.4%)	1 (4.3%)	1 (4.5%)
1-9	20 (44.4%)	15 (65.2%)	5 (22.7%)
10-12	4 (8.9%)	1 (4.3%)	3 (13.6%)
13-17	15 (33.3%)	6 (26.1%)	9 (40.9%)
18-30	4 (8.9%)	0	4 (18.2%)
Gender			
Female	15 (33.3%)	6 (26.1%)	9 (40.9%)
Male	30 (66.7%)	17 (73.9%)	13 (59.1%)
Race[a]			
American Indian or Alaska Native	0	0	0
Asian	1 (2.7%)	1 (5.0%)	0
Black or African American	6 (16.2%)	3 (15.0%)	3 (17.6%)
White	29 (78.4%)	15 (75.0%)	14 (82.4%)
Multiple Races	1 (2.7%)	1 (5.0%)	0
Ethnicity[a]			
Hispanic or Latino	17 (38.6%)	11 (47.8%)	6 (28.6%)
Not Hispanic or Latino	27 (61.4%)	12 (52.2%)	15 (71.4%)
Site of Relapse, Time from Diagnosis to Relapse			
Marrow, ≥36 months	7 (15.6%)	5 (21.7%)	2 (9.1%)
Marrow, 18-36 months	11 (24.4%)	5 (21.7%)	6 (27.3%)
Marrow, <18 months	24 (53.3%)	10 (43.5%)	14 (63.6%)
IEM, <18 months	3 (6.7%)	3 (13.0%)	0
Cytogenetic Group			
Favorable	7 (16.6%)	5 (22.7%)	2 (10%)
• *ETV6-RUNX1*	4 (9.5%)	2 (9.1%)	2 (10.0%)
• Hyperdiploid with +4, +10	3 (7.1%)	3 (13.6%)	0
Unfavorable	7 (16.6%)	3 (13.6%)	4 (20%)
• *KMT2A*-rearranged	4 (9.5%)	2 (9.1%)	2 (10.0%)
• Hypodiploid	3 (7.1%)	1 (4.5%)	2 (10.0%)
Other	28 (66.7%)	14 (63.6%)	14 (70.0%)
Unknown	3	1	2

[a] Race was unknown for 8 patients with early treatment failure (3 without blinatumomab salvage therapy and 5 with salvage therapy), and ethnicity was unknown for 1 patient who proceeded to salvage therapy.