Supplementary Table S1. Baseline patient demographics, disease characteristic, efficacy and toxicity in patients with recent and new VTE

Characteristics	All patients	Prior Recent (6 months) VTE before CAR T	New (day 0 – 100) VTE after CAR T	
	N (%)	N (%)	N (%)	[d] *p* value (*P* = New VTE vs. All Patients with no new VTE)
No of Patients	148 (100%)	28/121[e] (23%)	16/148 (11%)	
Age>60 years	93/148 (63%)	19/28 (67%)	11/16 (69%)	*p=0.60*
Sex=Male	91/148 (62%)	18/28 (62%)	9/16 (56%)	*p=0.64*
Stage III/IV	114/148 (77%)	21/28 (75%)	13/16 (81%)	*p=0.67*
Platelets < 75K/μl at Apheresis	10/148 (7%)	1/28 (4%)	2/16 (13%)	*p=0.33*
Bulky Disease	24/148 (16%)	7/28 (25%)	10/16 (63%)	***p=0.002***
IPI at Apheresis 3-5	99/148 (67%)	19/28 (68%)	14/16 (88%)	*p=0.06*
DHL[a]	27/106 (25%)	6/28 (21%)	4/16 (25%)	*p=0.58*

Bridging Therapy used	79/148 (53%)	21/28 (71%)	11/16 (69%)	***p=0.004***
ECOG 2-4 at Apheresis	27/148 (32%)	11/28 (39%)	8/16 (50%)	***p=0.002***
Relapsed/Refractory disease[b]	100/148 (68%)	19/28 (68%)	10/16 (62%)	*p=0.65*
Primary Refractory disease[b]	48/148 (32%)	9/28 (32%)	6/16 (38%)	*p=0.65*
Prior lines of therapy 3+	102/148 (69%)	20/28 (71%)	11/16 (69%)	*p=0.98*
ORR at 6 m [ongoing] [c]	78/140 (56%)	14/25 (56%)	7/14 (50%)	*p=0.72*
CR at 6m [ongoing] [c]	60/140 (43%)	10/25 (40%)	3/14 (21%)	*p=0.75*
Grade 3+ CRS	12/148 (8%)	5/28 (21%)	4/16 (25%)	***p=0.027***
Grade 3+ ICANS	37/148 (26%)	6/28 (28%)	8/16 (50%)	***p=0.014***

VTE=Venous thromboembolism, IPI= International Prognostic Index, DHL= Double hit lymphoma, ORR= overall response rate, CR= complete response, CRS= cytokine release syndrome, ICANS= immune effector cell associated neurotoxicity syndrome

[a] Based on 106 patients who had gene rearrangement study by FISH done

[b] Primary refractory, no response to prior therapy; refractory, no response to last line of therapy at the time of referral for CAR T-cell therapy

[c] Based on patients with response assessment available at 6 months, or who progressed/died before 6 months.

[d] p-value by Chi square or Fisher's exact test comparing the groups: All patients (without new VTE) vs patients with New VTE.

[e] Patients who received CAR T-cell therapy on clinical trial were excluded from this “prior recent” VTE because this was a clinical trial exclusio

Supplementary Table S2: Details of 16 patients (patient no 1-16) with 'new' VTE after CAR T cell infusion

Pt#	VTE	Day of VTE[a]	Symp vs. Inci	AC used[b]	Total Duration of AC	AC held after initiation?	Day # AC was held?[c,d]	Plt w AC held	Was AC resumed?	Cause of death
1	CVT	12	Inci	None^	None	-	-	-	-	Lymphoma
2	CRT	11	Symp	LMWH	3 m	Yes*	3	78	Yes	Lymphoma
3	DVT	1	Inci	LMWH	6 m	Yes*	6	45	Yes	-
4	DVT	12	Symp	Dabi	Indefinite	No	-	-	-	-
5	PE	28	Inci	Riva	4 m	No	-	-	-	Lymphoma
6	CRT	15	Symp	Riva	3 m	No	-	-	-	Lymphoma
7	PE	24	Symp	LMWH	5 d	Yes*	5	202	No	Lymphoma
8	CRT	8	Symp	LMWH	3 m	No	-	-	-	Lymphoma
9	MVT	31	Inci	None^	None	-	-	-	-	-
10	DVT	11	Symp	LMWH	3 m	No	-	-	-	-
11	DVT	4	Symp	LMWH	3 m	No	-	-	-	-
12	CRT	6	Symp	UFH	5 d	Yes*	5	39	No	Candidemia
13	RVT	2	Inci	None^	None	-	-	-	-	Lymphoma
14	PE	7	Symp	UFH	2 d	Yes*	10	53	No	MVA
15	PE	30	Symp	Apix	Indefinite	No	-	-	-	-
16	CVT	21	Symp	None^	None	-	-	-	-	Lymphoma

DVT= deep vein thrombosis, PE= pulmonary embolism, CVT= cerebral venous thrombosis, RVT= renal vein thrombosis, MVT= mesenteric vein thrombosis, CRT= catheter related thrombosis, symp= symptomatic, Inci= incidental, AC= anticoagulation, plt=

platelet, w=when, Recur= recurrent, VTE= venous thromboembolism, cont= continued, UFH= unfractionated heparin, LMWH= low molecular weight heparin, Dalte=Dalteparin, Dabi=Dabigatran, Riva=Rivaroxaban, Apix= Apixaban, d=days, m=months, -= not applicable as AC was not discontinued or no death occurred

[a]Day after CAR T-cell infusion when VTE was first discovered

[b]All patients received full dose therapeutic anticoagulation

[c]Number of days on anticoagulation when anticoagulation was held.

[d]None of the patients who had anticoagulation held developed recurrent thrombosis

^Anticoagulation was not provided to four patients due to the lack of symptoms and/or increased risk of bleeding. Three out of these four patients eventually died of causes unrelated to thrombosis (lymphoma progression +/- severe concurrent CRS). Only one (MVT) survived without evidence of progressive or recurrent thrombosis on PET/CT and CT imaging followed up to 2 years.

*Among the 5 patients that had anticoagulation initiated but subsequently held due to thrombocytopenia or increased risk of bleeding, two had a DVT, one CRT, and two had a PE. For two patients with DVT, anticoagulation was resumed after platelet count recovery and no recurrent thrombosis or bleeding was noted. One patient completed 6 months of anticoagulation, other patient died of lymphoma progression 3 months post CAR T infusion. For the three patients who did not resume anticoagulation (2 PE, 1 CRT), one had evidence of PE resolution on day +30 contrast CT but subsequently died at approximately day +60 of a motor vehicle accident (MVA), and the other two also died between day +30-60 of lymphoma progression and candidemia, respectively.

Supplementary Table S3. Coagulation parameters, toxicity and efficacy outcomes in 15 patients (patient no 14-28) with hypofibrinogenemia (serum fibrinogen level<200 mg/dL)

Pt#	VTE (New/Prior recent)	First measured fib level< 200 (mg/dL)	Day of first fib level< 200 (mg/dL)	Nadir fib level (mg/dL)	Day of nadir fib level	Plt at nadir fib	PTT at nadir fib	PT at nadir fib	INR at nadir fib	Plt used	Cryo[d] used	FFP used	Max Gr CRS	Max Gr ICANS	Response At 6 months	Cause of Death
14*	**New**	85 [a]	6	74	6	50	23.3	11.8	1	**Yes**	**Yes**	No	3	2	**Expired**	MVA
15*	**New**	137[a, b]	8	88	9	45	**45.1**	**13.6**	1.1	**Yes**	**Yes**	No	2	0	CR	NA
16*	New	162	5	81	6	12	**45.8**	**20.9**	**1.7**	**Yes**	**Yes**	No	5	3	**Expired**	Lymphoma
17	None	60	9	60	9	15	23	**14.1**	1.2	**Yes**	**Yes**	No	3	3	**Expired**	CNS fusarium
18	None	132	11	98	21	47	25.2	12.6	1.1	No	No	No	3	4	**Expired**	Lymphoma
19	None	189	23	189	23	20	24.7	9.8	0.8	No	No	No	2	2	CR	NA
20	None	84	13	53	13	28	28.2	**14.5**	1.2	No	**Yes**	No	2	3	CR	NA
21	None	186	21	186	21	59	26.7	10.6	0.9	No	No	No	2	2	**Expired**	Lymphoma
22	None	168	6	168	6	230	23.4	**14.2**	1.2	No	No	No	1	0	**Expired**	Lymphoma
23	None	164	27	154	32	47	32.3	11.3	1	No	No	No	1	0	**Expired**	Lymphoma
24	None	161	6	91	10	27	25.3	9.9	0.8	No	**Yes**	No	2	3	**Expired**	Lymphoma
25	None	117	17	102	20	69	24.3	12.1	1	No	No	No	2	4	CR	NA
26	**Prior recent**	112[a, c]	17	95	18	46	23.1	**24.9**	**2.1**	**Yes**	**Yes**	**Yes**	5	4	**Expired**	HLH
27	None	96	9	96	9	30	26.6	12.9	1.1	**Yes**	**Yes**	No	2	4	**Expired**	Lymphoma
28	None	199	12	199	12	236	NA	NA	NA	No	No	No	3	3	**Expired**	Lymphoma

VTE= Venous thromboembolism, Fib= fibrinogen, PT= prothrombin time, PTT= partial thromboplastin time, Plt= platelets, Cryo= cryoprecipitate, FFP= fresh frozen plasma, Max=maximum, Gr=grade, ORR= overall response rate, CR= complete response, CRS= cytokine release syndrome, ICANS= immune effector cell associated neurotoxicity syndrome, MVA= Motor vehicle accident, NA= Not applicable as no death occurred

*Patients 14, 15 and 16 are also present in **Supplementary Table S2** as they had a new VTE after CAR T-cell infusion. Patient # 14 was diagnosed with PE on day +5 after CAR T-cell infusion. She was started on a heparin infusion which was held after 48 hours due to a low serum fibrinogen level (74mg/dL), and thrombocytopenia (platelet < 50,000 / mm^3) that persisted beyond day +30. AC was therefore never resumed. Day +30 CT with contrast showed resolution of the prior PE and on PET/CT her lymphoma response was that of stable disease. Unfortunately, she died during a motor vehicle accident (MVA) at approximately day +60. Patient # 15 had serum fibrinogen level checked to workup for HLH at day +8 (HLH criteria were not met after workup). Patient was diagnosed with VTE (PE) on day +30 after CAR T-cell infusion, well beyond onset (day +9) and resolution (day +12) of hypofibrinogenemia. This patient continues to be on AC without complications. Fibrinogen was not re-checked prior to starting AC as the patient did not have bleeding or thrombocytopenia at the time of PE. Patient# 16 had serum fibrinogen level checked due to elevated PTT/ INR with nadir serum fibrinogen of 81 mg/dL on day +6. Patient received cryoprecipitate with improvement of serum fibrinogen level. Patient was diagnosed with VTE on day +21 with normal serum fibrinogen level at the time of diagnosis. AC was not started as the patient was critically ill and diagnosed with concomitant lymphoma progression. Patient died due to grade 5 CRS on day +24 post CAR T-cell infusion.

[a]Two patients had prior recent and or new VTE and were on anticoagulation that was on hold for platelet count<50K at the time fibrinogen level was measured

[b]Patient had bleeding from a pleural catheter which resolved after holding anticoagulation and platelet transfusion

[c]Patient received oral Vitamin K for 3 consecutive days until INR normalized

[d]Days to achieve serum fibrinogen level [median (range)] >100 mg/dL=10 (7-27) and >150 mg/dL=17 (7-29) with the use of cryoprecipitate