Table S1. TRIPOD Checklist				
Section/Topic	**Item**		**Checklist Item**	**Page**
Title and abstract				
Title	1	D;V	Identify the study as developing and/or validating a multivariable prediction model, the target population, and the outcome to be predicted.	1 (Lines 1-3)
Abstract	2	D;V	Provide a summary of objectives, study design, setting, participants, sample size, predictors, outcome, statistical analysis, results, and conclusions.	2
Introduction				
Background and objectives	3a	D;V	Explain the medical context (including whether diagnostic or prognostic) and rationale for developing or validating the multivariable prediction model, including references to existing models.	3 and 4 (Lines 1-15)
	3b	D;V	Specify the objectives, including whether the study describes the development or validation of the model or both.	4 (Lines 11-15)
Methods				
Source of data	4a	D;V	Describe the study design or source of data (e.g., randomized trial, cohort, or registry data), separately for the development and validation data sets, if applicable.	4 (Lines 19-23 and 5 (Lines 1-11)
	4b	D;V	Specify the key study dates, including start of accrual; end of accrual; and, if applicable, end of follow-up.	4 (Lines 19-23 and 5 (Lines 1-11)
Participants	5a	D;V	Specify key elements of the study setting (e.g., primary care, secondary care, general population) including number and location of centres.	4 (Lines 19-23 and 5 (Lines 1-11)
	5b	D;V	Describe eligibility criteria for participants.	4 (Lines 19-23 and 5 (Lines 1-4)
	5c	D;V	Give details of treatments received, if relevant.	Provided in Results
Outcome	6a	D;V	Clearly define the outcome that is predicted by the prediction model, including how and when assessed.	5 (Lines 14-17)
	6b	D;V	Report any actions to blind assessment of the outcome to be predicted.	5 (Lines 23-24)
Predictors	7a	D;V	Clearly define all predictors used in developing or validating the multivariable prediction model, including how and when they were measured.	5 (Lines 16-23) and Table S2
	7b	D;V	Report any actions to blind assessment of predictors for the outcome and other predictors.	5 (Lines 23-24)
Sample size	8	D;V	Explain how the study size was arrived at.	6 (Lines 3-4)
Missing data	9	D;V	Describe how missing data were handled (e.g., complete-case analysis, single imputation, multiple imputation) with details of any imputation method.	6 (Lines 14-15)
Statistical analysis methods	10a	D	Describe how predictors were handled in the analyses.	6 (Lines 8-15)
	10b	D	Specify type of model, all model-building procedures (including any predictor selection), and method for internal validation.	6 (Lines 15-24) and 7 (Lines 1-2)
	10c	V	For validation, describe how the predictions were calculated.	6 (Lines 23-24) and 7 (Lines 1-2)
	10d	D;V	Specify all measures used to assess model performance and, if relevant, to compare multiple models.	6 (Lines 15-24) and 7 (Lines 1-2)
	10e	V	Describe any model updating (e.g., recalibration) arising from the validation, if done.	NA
Risk groups	11	D;V	Provide details on how risk groups were created, if done.	6 (Lines 20-22)
Development vs. validation	12	V	For validation, identify any differences from the development data in setting, eligibility criteria, outcome, and predictors.	7 (Lines 1-2)
Results				
Participants	13a	D;V	Describe the flow of participants through the study, including the number of participants with and without the outcome and, if applicable, a summary of the follow-up time. A diagram may be helpful.	7 (Lines 12-14)
	13b	D;V	Describe the characteristics of the participants (basic demographics, clinical features, available predictors), including the number of participants with missing data for predictors and outcome.	7 (Lines 14-24) and 8 (Lines 1-4). Table 1
	13c	V	For validation, show a comparison with the development data of the distribution of important variables (demographics, predictors and outcome).	9 (Lines 22-25) and 10 (Lines 1-21)
Model development	14a	D	Specify the number of participants and outcome events in each analysis.	8 (Lines 19-24), 9, and 10 (Lines 1-21)
	14b	D	If done, report the unadjusted association between each candidate predictor and outcome.	Table S2
Model specification	15a	D	Present the full prediction model to allow predictions for individuals (i.e., all regression coefficients, and model intercept or baseline survival at a given time point).	8 (Lines 19-24) and 9 (Lines 1-

				20), Tables 2 and 3
	15b	D	Explain how to the use the prediction model.	Table 2 and Figure 2
Model performance	16	D;V	Report performance measures (with CIs) for the prediction model.	9 (Lines 1-20)
Model-updating	17	V	If done, report the results from any model updating (i.e., model specification, model performance).	NA
Discussion				
Limitations	18	D;V	Discuss any limitations of the study (such as nonrepresentative sample, few events per predictor, missing data).	14 (Lines 8-18)
Interpretation	19a	V	For validation, discuss the results with reference to performance in the development data, and any other validation data.	13 (Lines 5-17)
	19b	D;V	Give an overall interpretation of the results, considering objectives, limitations, results from similar studies, and other relevant evidence.	11 (Lines 5-13)
Implications	20	D;V	Discuss the potential clinical use of the model and implications for future research.	14 (Lines 20-24) and 15 (Lines 1-2)
Other information				
Supplementary information	21	D;V	Provide information about the availability of supplementary resources, such as study protocol, Web calculator, and data sets.	Table S1 and S2
Funding	22	D;V	Give the source of funding and the role of the funders for the present study.	NA

*Items relevant only to the development of a prediction model are denoted by D, items relating solely to a validation of a prediction model are denoted by V, and items relating to both are denoted D;V. We recommend using the TRIPOD Checklist in conjunction with the TRIPOD Explanation and Elaboration document.

Table S2. Univariable Analysis of Risk-Factors Associated with VTE in the Derivation Cohort

Variable	Hazard Ratio (95% CI)	*p*-value
Year of Treatment (per 1-year increase)	1.05 (0.98-1.14)	0.18
Age at treatment initiation (per 10-year increase)	0.98 (0.82-1.19)	0.87
Male sex	1.17 (0.76-1.81)	0.48
Race: **Black vs white** **Black vs not Black**	 1.51 (0.92-2.45) 1.48 (0.91-2.40)	 0.10 0.12
Myeloma subtype: **IgG vs others**	 1.01 (0.59-1.72)	 0.97
Serum albumin (per 1 g/dl increase)	0.85 (0.62-1.17)	0.32
B-2 microglobulin (per 5 mg/l increase)	1.04 (0.90-1.21)	0.57
ISS stage at diagnosis (III vs I/II)	1.02 (0.63-1.64)	0.94
Percent BMPC (per 10% increase)	1.02 (0.94-1.11)	0.65
Serum M-protein (per 1 g/dl increase)	1.02 (0.91-1.15)	0.68
Involved/Uninvolved sFLC ratio: >80 (median) vs ≤80	1.25 (0.79-1.99)	0.35
Abnormal metaphase cytogenetics (vs normal)	1.69 (1.00-2.86)	0.051
FISH cytogenetics (High-Risk* vs Standard-Risk)	1.19 (0.66-2.15)	0.55
LDH (>UNL vs ≤UNL)	1.22 (0.71-2.10)	0.46
Serum creatinine (per 1 mg/dl increase)	1.04 (0.93-1.15)	0.50

Serum calcium (per 1 mg/dl increase)	1.01 (0.88-1.15)	0.92
Hemoglobin (per 1 g/dl increase)	0.96 (0.87-1.05)	0.36
History of VTE (>6 months prior to treatment initiation)	3.55 (1.36-9.26)	0.010
History of ATE	1.00 (0.48-2.05)	0.99
BMI (per 1 kg/m^2 increase)	1.02 (0.99-1.05)	0.14
Central Venous Catheter (Yes vs No)	0.80 (0.32-2.00)	0.63
Pacemaker *in situ* (Yes vs No)	NA	0.56; Gray test
Cardiac disease[!] (Yes vs No)	0.87 (0.45-1.68)	0.68
Diabetes mellitus (Yes vs No)	0.59 (0.29-1.20)	0.15
Chronic kidney disease (Yes vs No)	0.77 (0.36-1.67)	0.51
Total leukocyte count (per 1 x 10^3/µl increase)	1.02 (0.99-1.05)	0.18
Platelet count (per 1 x 10^3/µl increase)	1.04 (0.99-1.10)	0.14
Hypertension (Yes vs No)	1.04 (0.67-1.60)	0.87
Hyperlipidemia (Yes vs No)	0.90 (0.55-1.47)	0.67
Liver disease (Yes vs No)	1.30 (0.42-4.04)	0.56
Acute infection (within 90 days)	1.43 (0.55-3.69)	0.46
Immobilization (within 90 days)	1.71 (1.10-2.65)	0.017
Pelvic/femur/hip fracture (within 90 days)	2.22 (1.02-4.83)	0.044
General surgery (within 90 days)	3.34 (1.99-5.59)	<0.001

Anesthesia use (within 90 days)	1.89 (1.20-2.96)	0.006
Trauma (within 90 days)	1.67 (0.22-12.7)	0.62
Erythropoietin use (Yes vs No)	1.72 (0.63-4.69)	0.29
Pre-existing clotting disorder (Yes vs No)	NA	0.79 (Gray test)
Pre-existing autoimmune disease (Yes vs No)	0.45 (0.11-1.85)	0.27
Hyperviscosity at diagnosis (Yes vs No)	NA	0.52 (Gray test)
Dexamethasone dose per cycle (mg) **120-160 vs <120** **>160 vs <120**	 0.89 (0.52-1.53) 0.75 (0.25-2.25)	 0.68 0.60
Doxorubicin use in induction therapy (Yes vs No)	NA	0.55 (Gray test)
Multi-agent cytotoxic chemotherapy in induction (Yes vs No)	NA	0.73 (Gray test)
Smoking history: **Former vs never** **Current vs never**	 0.67 (0.36-1.24) 1.01 (0.58-1.74)	 0.20 0.98
IVIG use (Yes vs No)	1.08 (0.14-8.17)	0.94
IMiD use in induction therapy (Yes vs No)	1.83 (1.09-3.05)	0.021
Initial Thromboprophylaxis Regimen: **LMWH vs None** **ASA vs None** **LMWH or ASA vs None**	 1.81 (0.61-5.36) 1.64 (1.00-2.68) 1.65 (1.01-2.68)	 0.28 0.048 0.044

Abbreviations: ISS: International Staging System ; BMPC: Bone Marrow Plasma Cells. sFLC: Serum Free Light Chain. FISH: Fluorescence in situ hybridization. LDH: Lactate Dehydrogenase. UNL: Upper Normal Limit. VTE: Venous Thromboembolism. ATE: Arterial Thromboembolism. BMI: Body Mass Index. NA: Not Applicable. IVIG: Intravenous Immunoglobulin. IMiD: Immunomodulatory Drug

* High-risk was defined as presence of t(4;14), t(14;16), t(14;20), and/or del(17p) irrespective of the percentage of CD-138 selected cells harboring the abnormality.

! Cardiac disease included congestive heart failure, myocardial infarction or clinically significant coronary artery disease, and/or clinically significant arrhythmias.

Table S3. Actual Distribution of PRISM Risk Score

Risk Score	N (%)	Group	N (%)
0	116 (17.8)	Low	116 (17.8)
1	34 (5.2)	Intermediate	482 (74.0)
2	304 (46.7)		
3	68 (10.4)		
4	49 (7.5)		
5	21 (3.2)		
6	6 (0.9)		
7	29 (4.5)	High	53 (8.1)
8	7 (1.1)		
9	8 (1.2)		
10	8 (1.2)		
11	1 (0.2)		

Table S4. Comparison of Baseline Demographic and Clinical Characteristics between Derivation and External Validation Cohorts

Variable	Derivation Cohort	External Validation Cohort	*p*-value
PRISM Score (median, range)	2 (0-11)	2 (0-12)	0.59
PRISM Risk Category (%)			
Low	18	22	0.28
Intermediate	74	68	
High	8	10	
Sex, Male (%)	55	53	0.69
Race/Ethnicity			
Non-Hispanic White	79	34	<0.001
Black	20	22	
Hispanic	0	38	
Asian/Pacific Islander	0.5	5	
Others	1	0.5	
Age at Treatment Initiation, median (range)	63 (22-91)	67 (33-91)	<0.001
Thromboprophylaxis (%)			
None	36	40	0.23
ASA	61	56	
Prophylactic LMWH	3	4	
IMiD use in Induction Regimen (%)	65	45	<0.001
Abnormal Metaphase Cytogenetics (%)	18	36	<0.001
Surgery within 90 days prior to treatment initiation (%)	9	10	0.87
Prior VTE (%)	2	2	0.89

Abbreviations: ASA-Aspirin. LMWH-Low Molecular weight Heparin. IMiD-Immunomodulatory Drug. VTE: Venous Thromboembolism.

Table S5. Summary of Hazard Ratio for VTE between PRISM Risk Groups by Cohort

Cohort	Comparison	Hazard Ratio (95% CI)	*p*-value
Derivation	High vs Low	16.59 (4.91-56.07)	<0.001
	Intermediate vs Low	4.23 (1.32-13.55)	0.0152
	Intermediate vs High	0.26 (0.15-0.43)	<0.001
Validation	High vs Low	4.37 (1.04-18.3)	0.043
	Intermediate vs Low	1.62 (0.47-5.59)	0.446
	Intermediate vs High	0.37 (0.14-1.02)	0.055

Abbreviations: VTE=Venous Thromboembolism.

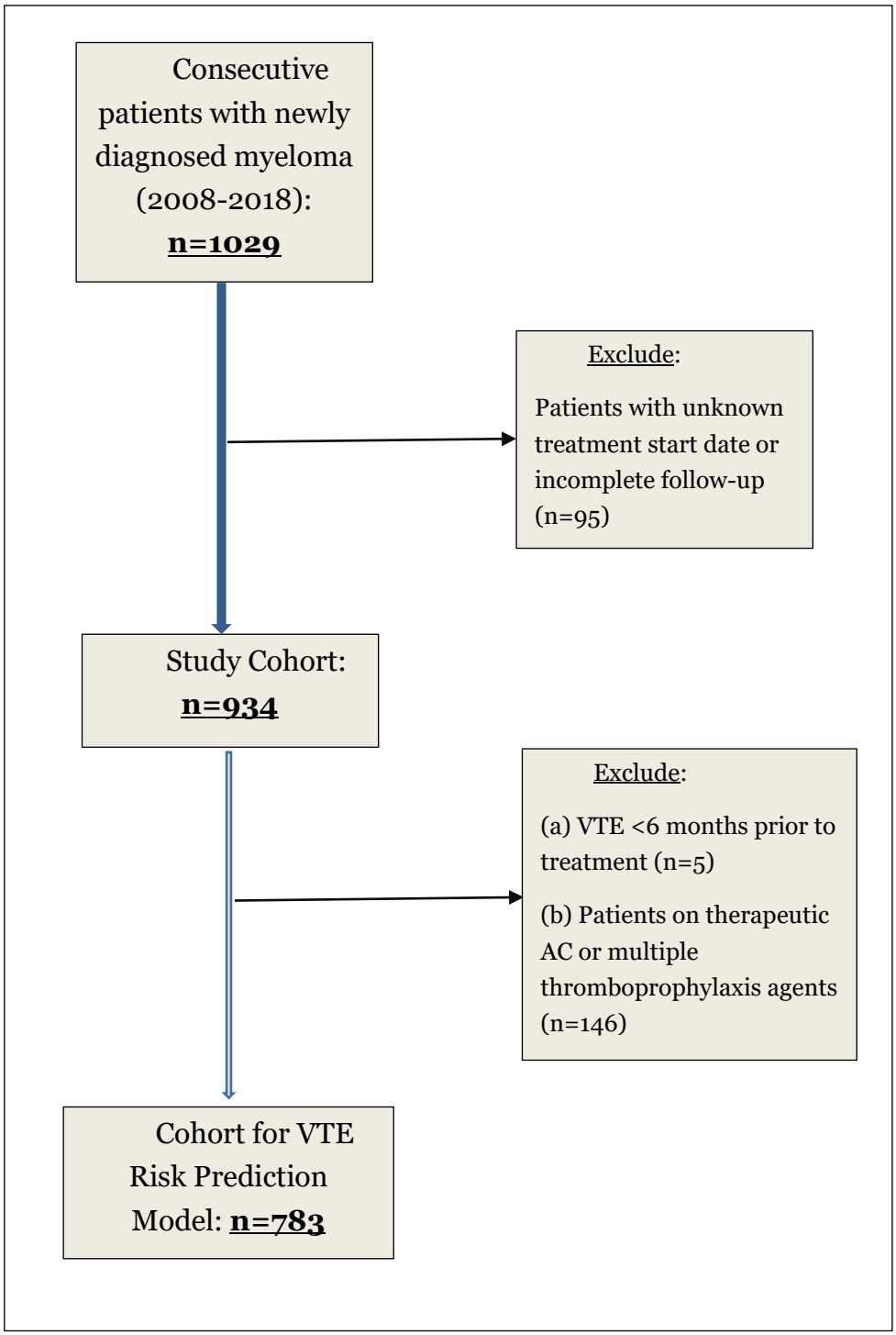

Figure S1. Flowchart for Patient Selection