Spleen volume reduction (SVR) predicts overall survival (OS) in myelofibrosis (MF) patients on pacritinib (PAC) but not best available therapy (BAT): PERSIST-2 landmark OS analysis

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INTRODUCTION

- Myelofibrosis (MF) is a life-limiting malignancy characterized by marrow fibrosis, splenomegaly, and progressive cytopenias.
- Pacritinib (PAC) is a JAK1-sparing inhibitor of JAK2/IRAK1/ACVR1[1,2] that demonstrated spleen volume response (SVR) benefit vs best available therapy (BAT; including ruxolitinib [RUX]) in MF patients with platelets ≤100×10⁹/L in the PERSIST-2 study.[3]
- JAK2 inhibitors can reduce spleen volume, which is considered a surrogate for disease response.
- The relationship between SVR and overall survival (OS) in MF patients with thrombocytopenia is unknown.

AIM

- To assess whether SVR on PAC or on BAT (including RUX) is associated with prolonged survival in MF patients with thrombocytopenia.

METHODS

- This analysis includes PERSIST-2 patients who were alive and on study at the start of the week 12 SVR window (study week 10) on PAC 200 mg twice daily (BID) and on BAT.
- Week 12 SVR was evaluated using various volume reduction thresholds: ≥35%, ≥20%, ≥10%, and >0%.
- OS was evaluated among SVR responders vs. non-responders at each threshold based on landmark analysis methodology. Survival was compared using the log-rank test. The impact of baseline imbalances between groups was assessed using Cox modeling.

RESULTS

- Among all tested SVR response thresholds, SVR ≥10% demonstrated the greatest separation in OS curves between responders vs. non-responders on PAC, but not on BAT (**Figure 1**).
- Compared to SVR ≥10% responders, non-responders had smaller spleen volumes and were more likely to require red blood cell (RBC) transfusions at baseline, shown in **Table 1**.

Table 1. Characteristics of SVR ≥10% Responders and Non-Responders

Baseline characteristics	PAC 200 mg BID		BAT	
	R N=65	N-R N=24	R N=28	N-R N=56
Age, median	66	67	66	69
DIPSS high risk	18.5%	46%	21%	25%
PLT count (x10⁹/L), median	58	67	68	47
Hemoglobin (g/dL), median	9.7	9.3	10.0	9.6
Requires RBC transfusion	38%	58%	32%	54%
Prior JAK2 inhibitor	45%	50%	64%	45%
Spleen volume (cm³), median	2573	2094.5	2907	2393
Palpable spleen length (cm), median	15.00	12.75	12.00	14.50

BAT, best available therapy; BID, twice daily; N-R, non-responder; PAC, pacritinib; PLT, platelet; R, responder; RBC, red blood cell.

RESULTS

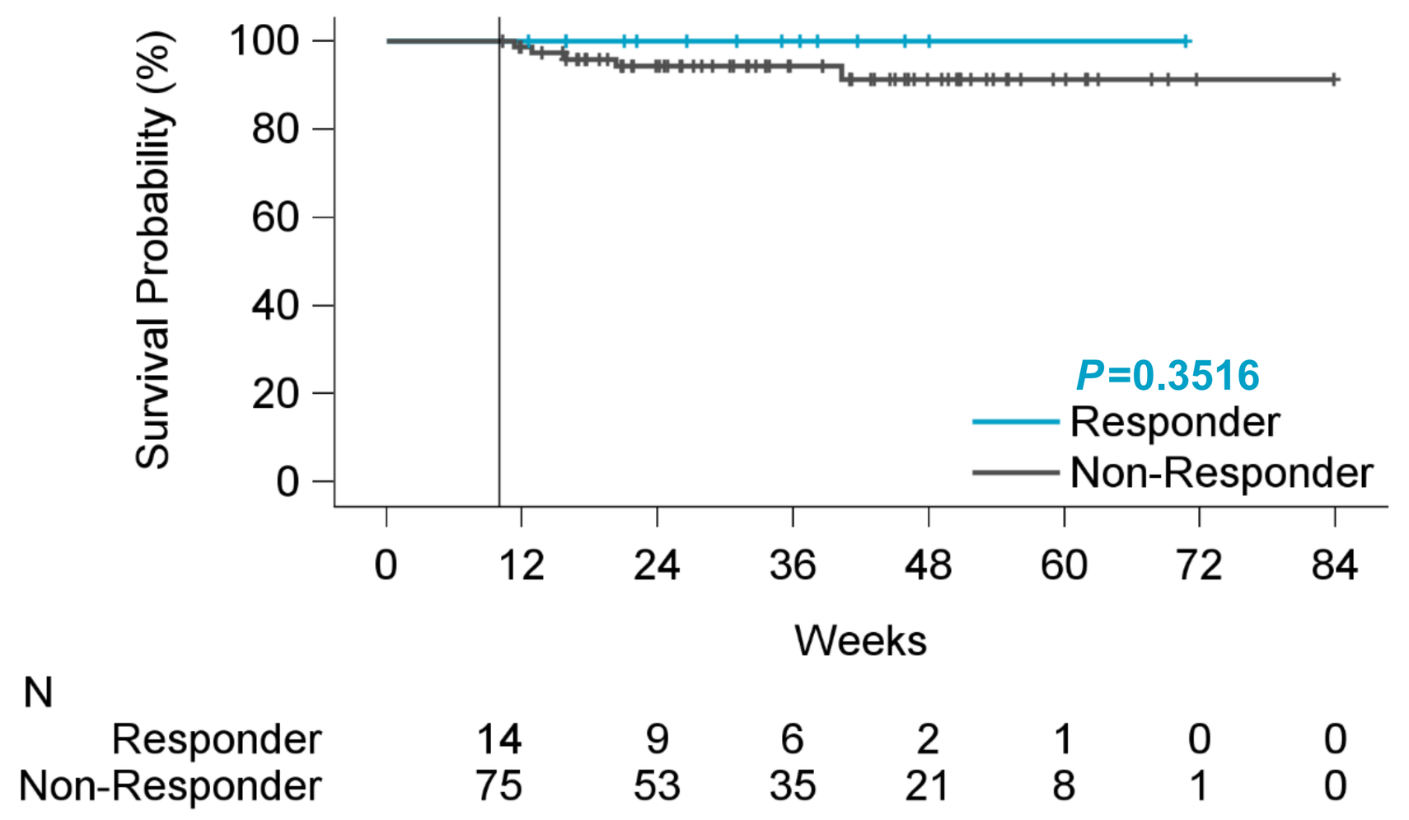
SVR is associated with survival benefit on PAC, but not on BAT

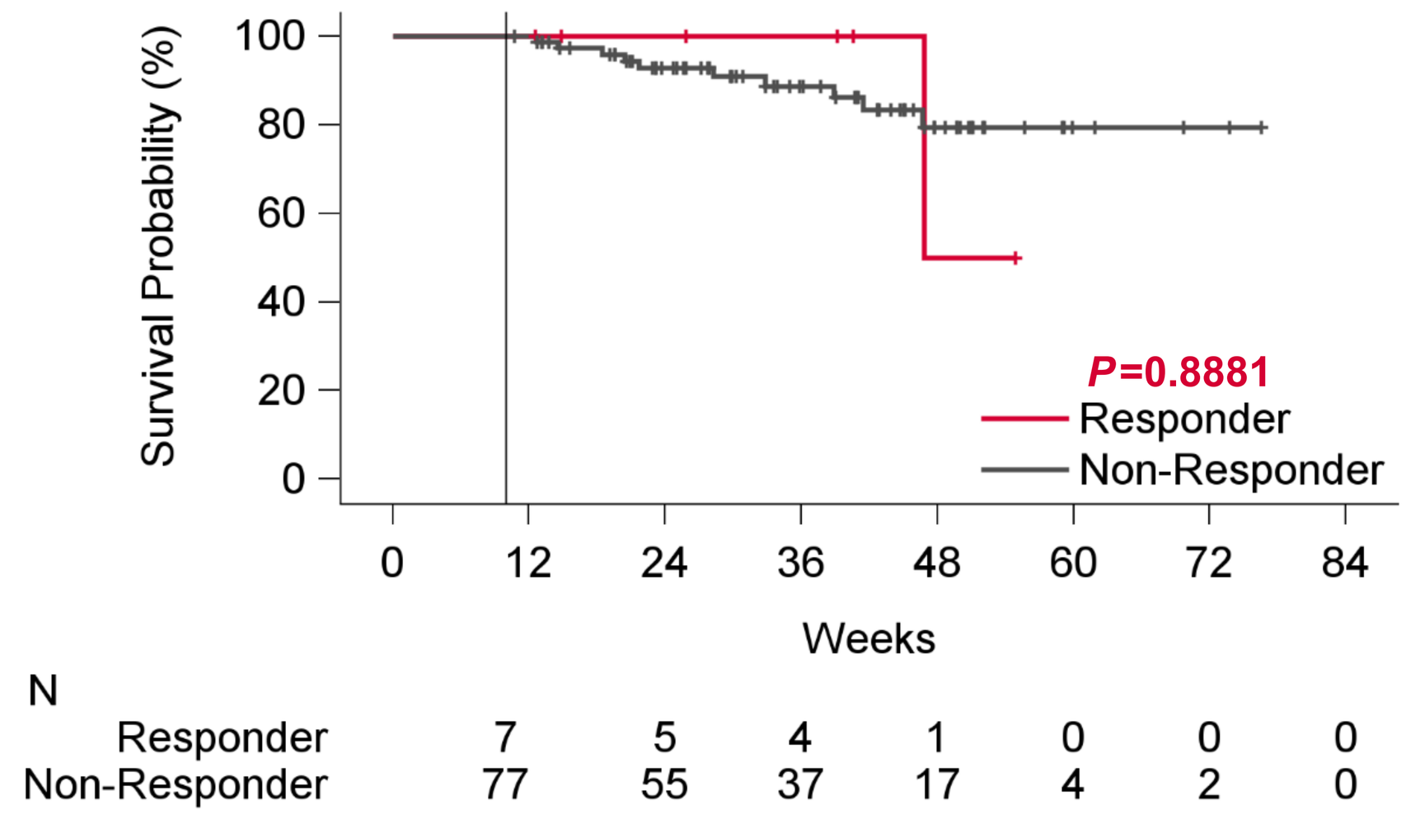
- On the PAC arm, SVR ≥10% was prognostic for survival (**Figure 1C**). More stringent SVR thresholds (≥20%, ≥35%) were also prognostic, but led to less separation between responder and non-responder survival curves (**Figure 1A, B**).
  - Adjusting for baseline spleen volume and requirement for RBC transfusion (in a univariate analysis) did not impact the survival benefit seen with SVR ≥10% on the PAC arm.
- Achieving any degree of spleen volume reduction (SVR >0%) was also associated with improved survival on PAC (hazard ratio [HR]=0.08 [95% confidence interval [CI]: 0.01, 0.51], *P*=0.0007), though the separation between responder and non-responder survival curves was not as great as at the SVR ≥10% threshold.
- SVR did not predict survival on BAT, regardless of SVR threshold. (**Figure 1**)
  - 11% (3/28) of patients on BAT who achieved SVR ≥10% died compared to a similar percent (14%, 8/56) of non-responders.

Figure 1. Overall Survival Stratified by SVR, Data shown on PAC (left) and BAT (right)

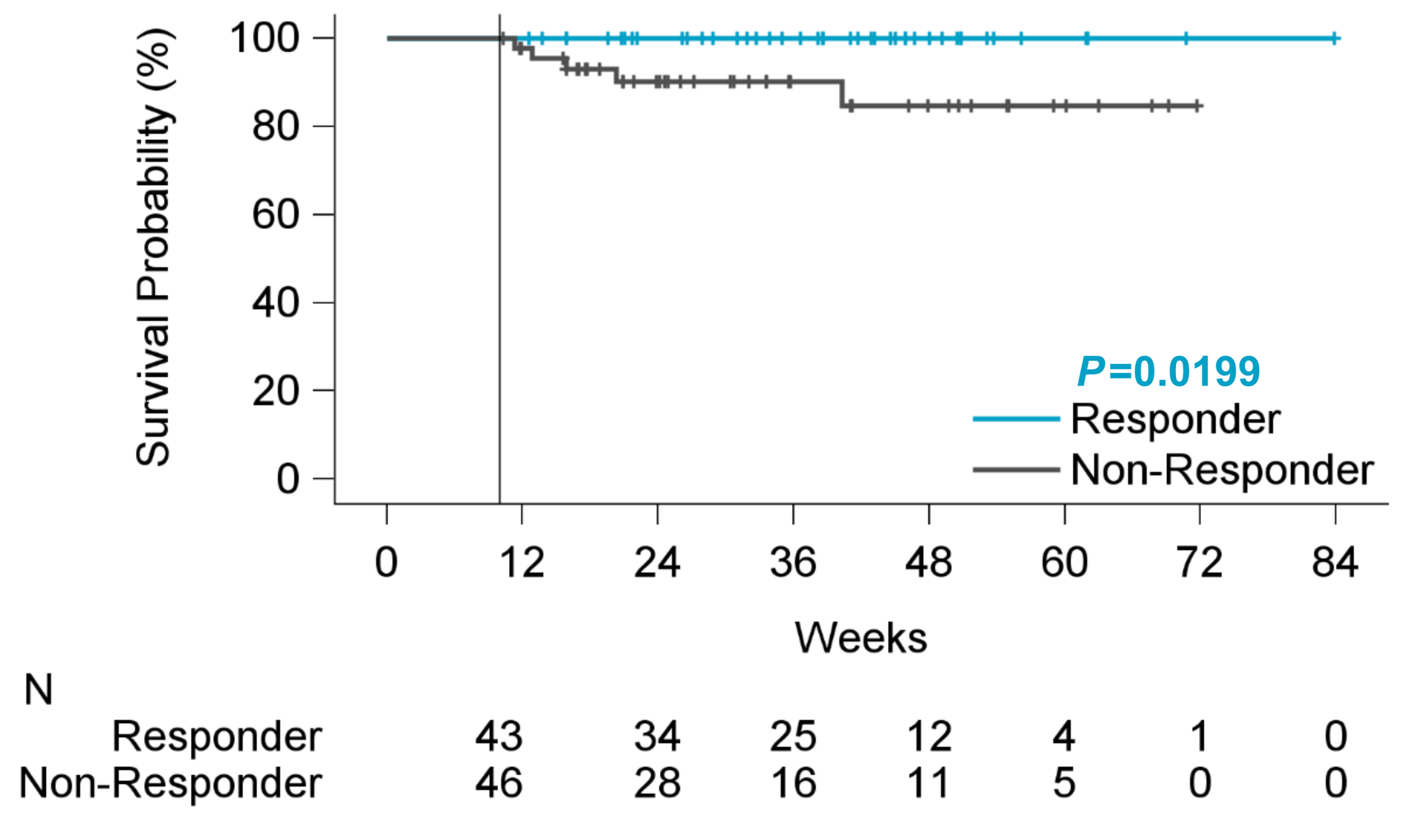
Pacritinib | **Best Available Therapy (including RUX)**

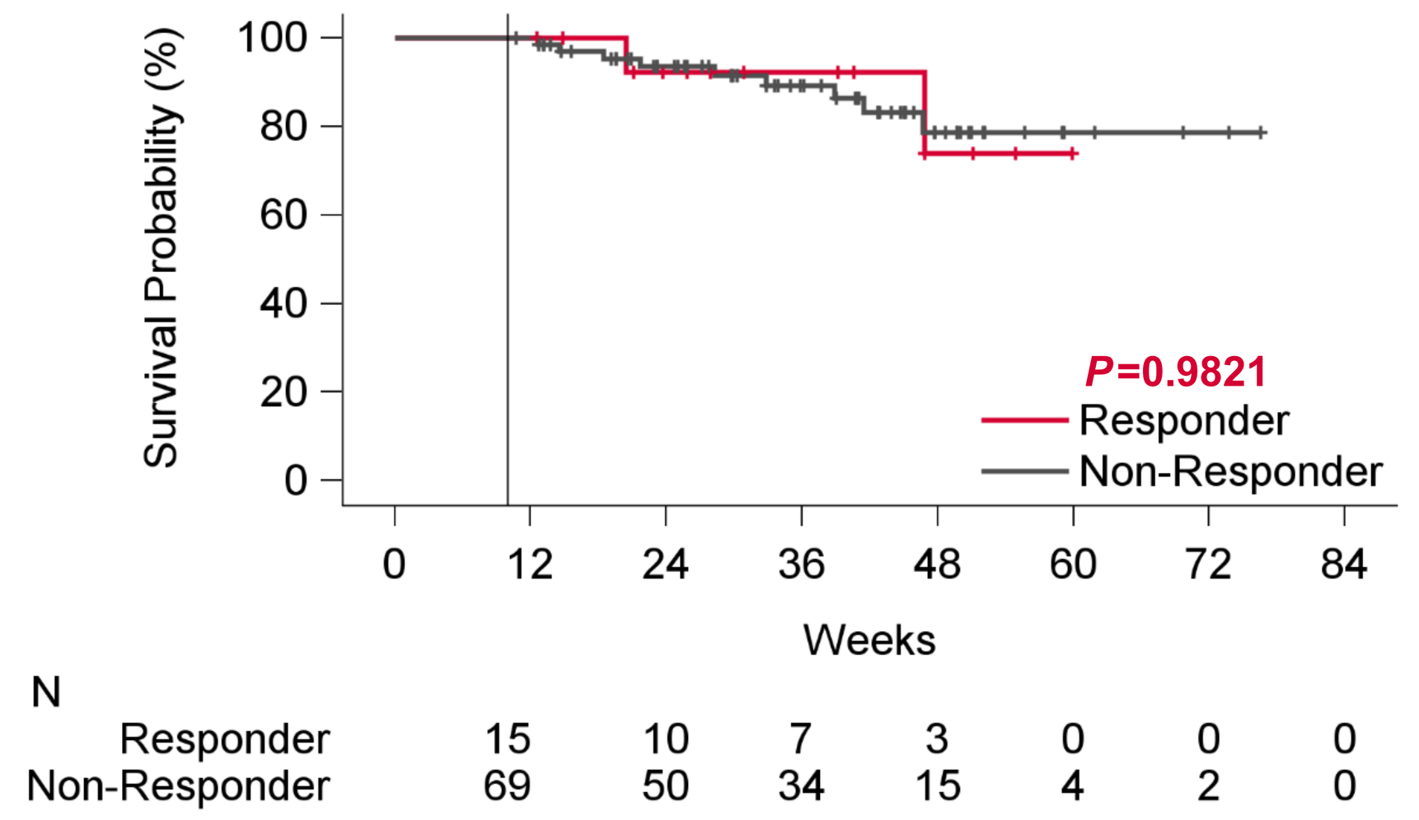
(A) OS stratified by ≥35% SVR



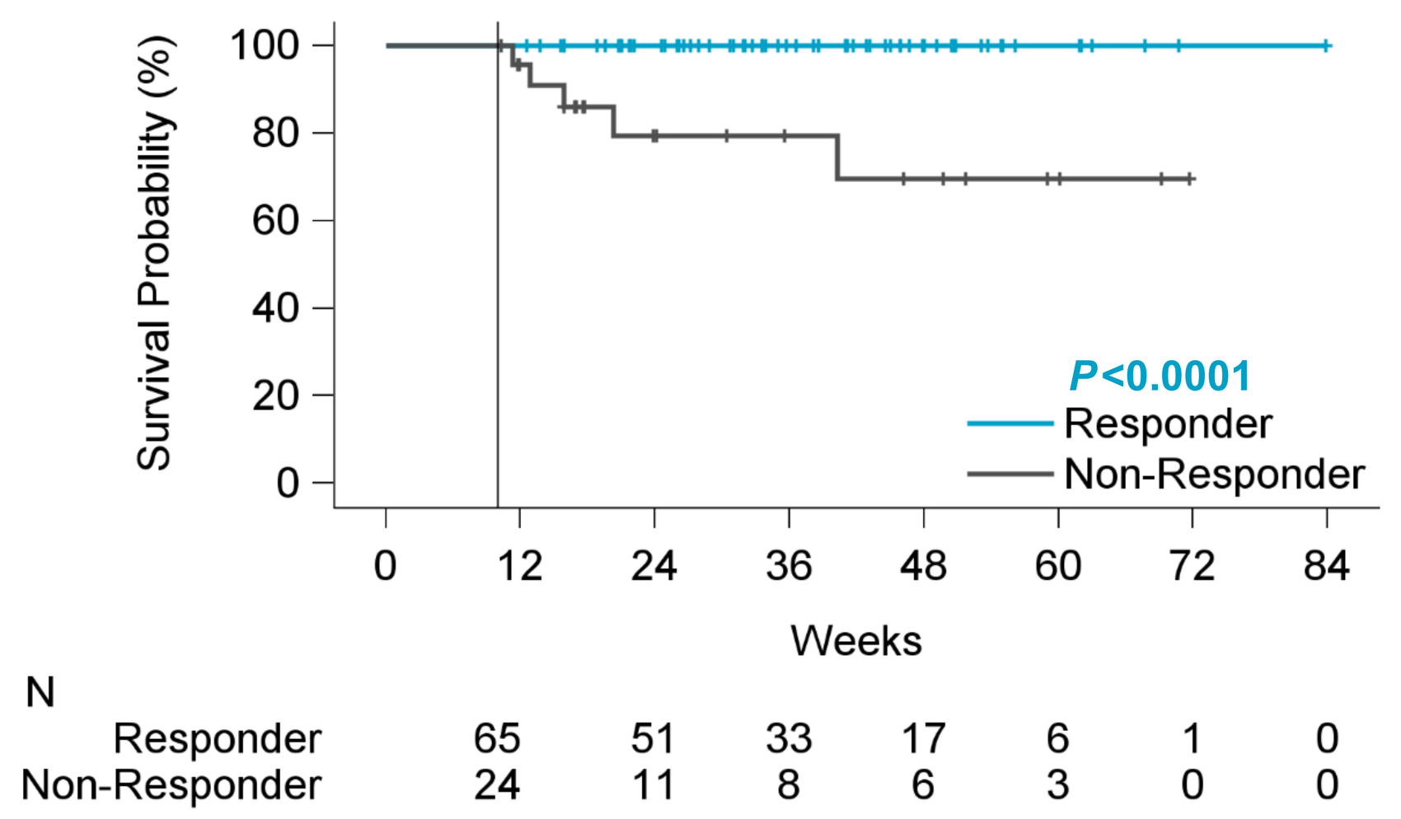


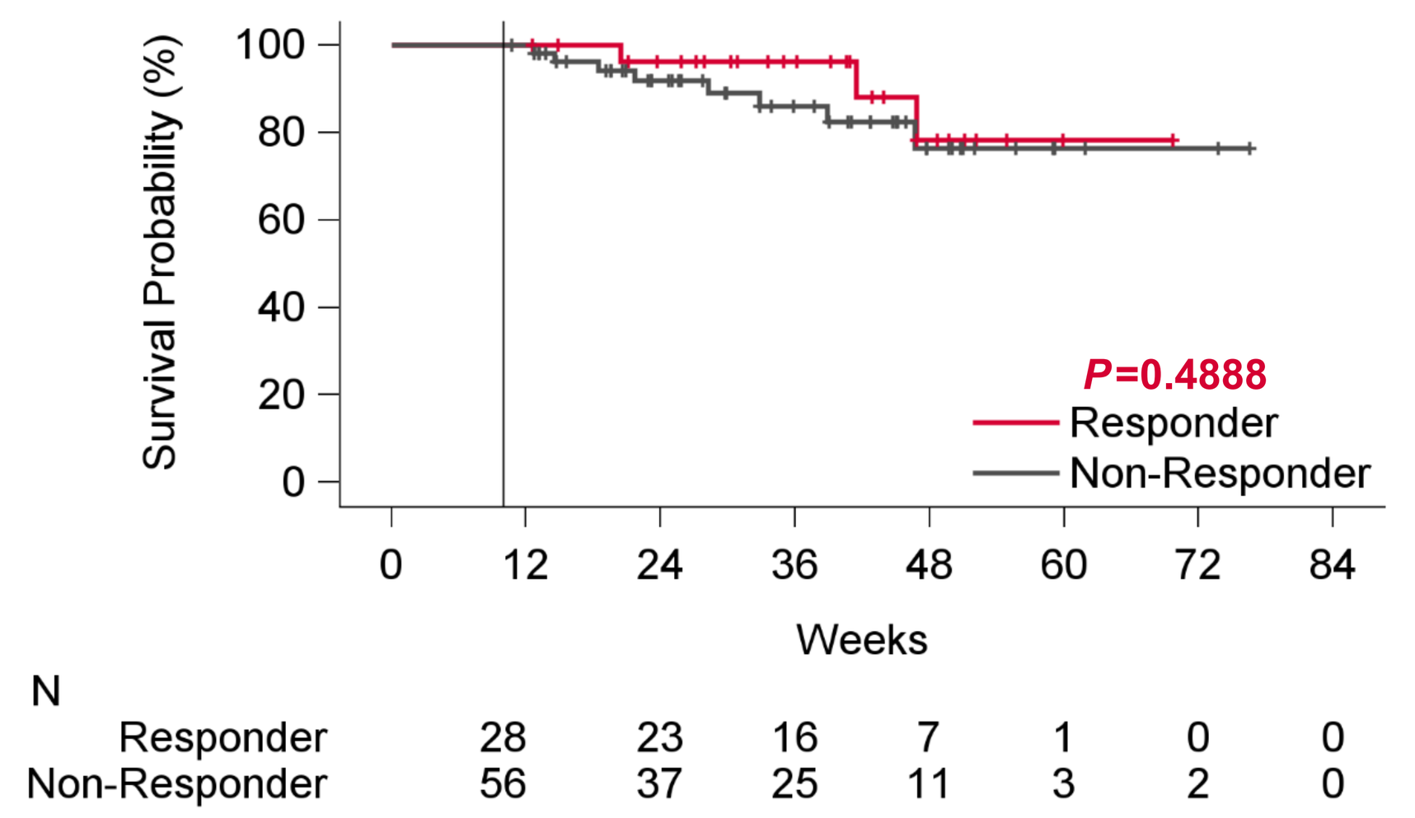
(B) OS stratified by ≥20% SVR





(C) OS stratified by ≥10% SVR



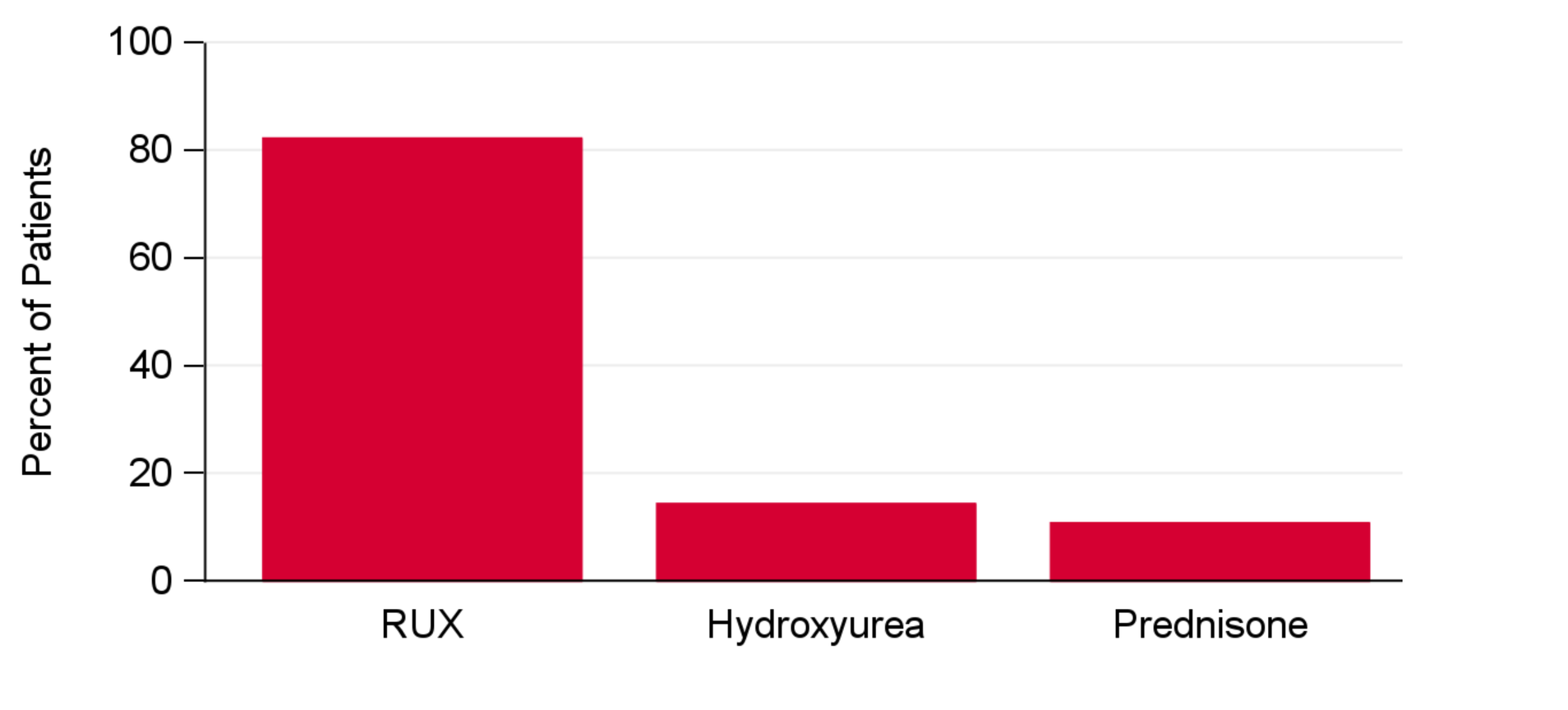


Low-dose ruxolitinib led to SVR≥10% on BAT, but not survival benefit

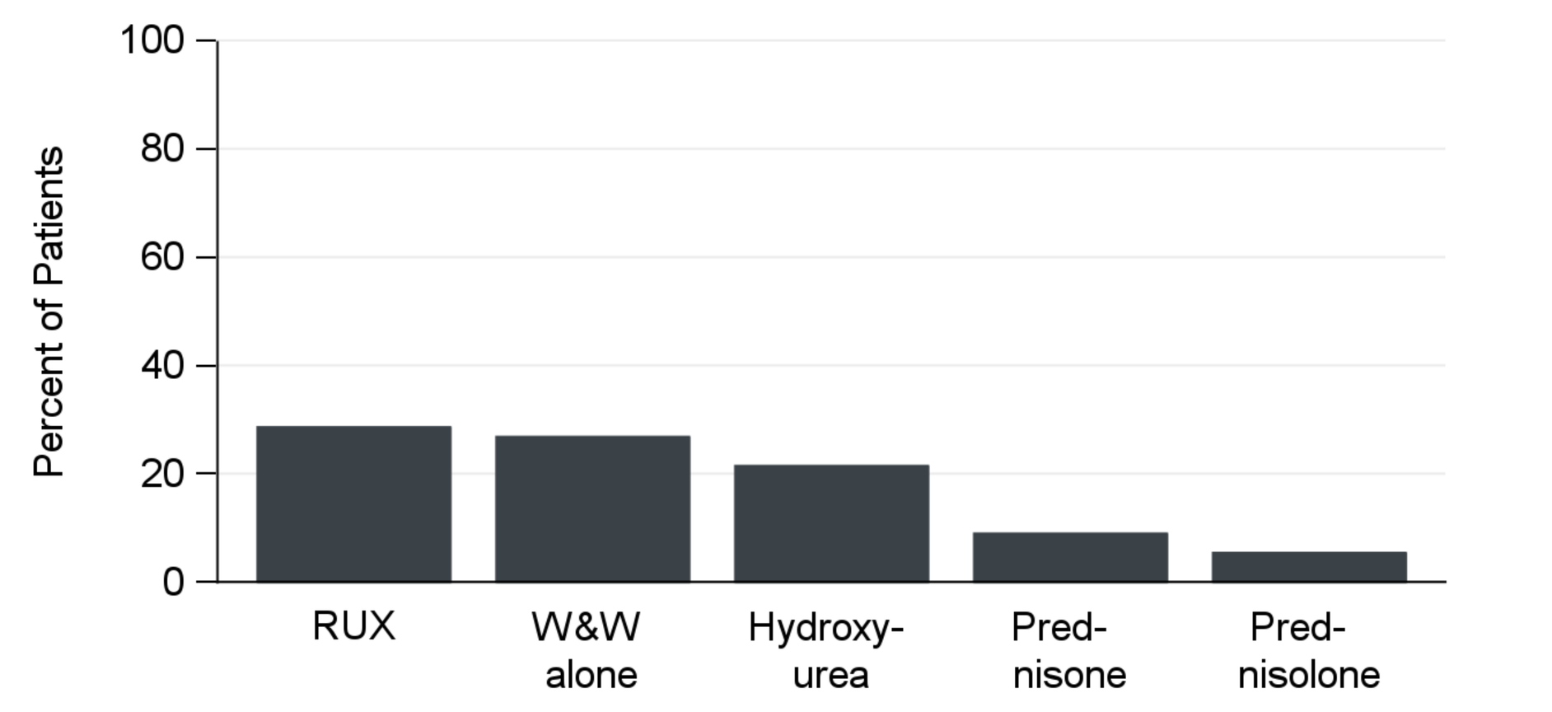
- On the PAC arm, median dose intensity through week 12 was 100% (200 mg BID) among SVR ≥10% responders and non-responders.
- Of the 28 patients on BAT who achieved SVR ≥10%, 23 (82%) were treated with RUX prior to the week 12 SVR assessment. Of these 23 patients on RUX:
  - 78% were on RUX ≤10 mg BID at the time of the landmark analysis
  - 43% on RUX ≤5 mg BID at the time of the landmark analysis
- Breakdown of BAT treatments stratified by SVR ≥10% response are shown in **Figure 2**.

Figure 2. BAT Treatments in SVR ≥10% Responders and Non-Responders

(A) BAT Components, SVR ≥10% Responders



(B) BAT Components, SVR ≥10% Non-Responders



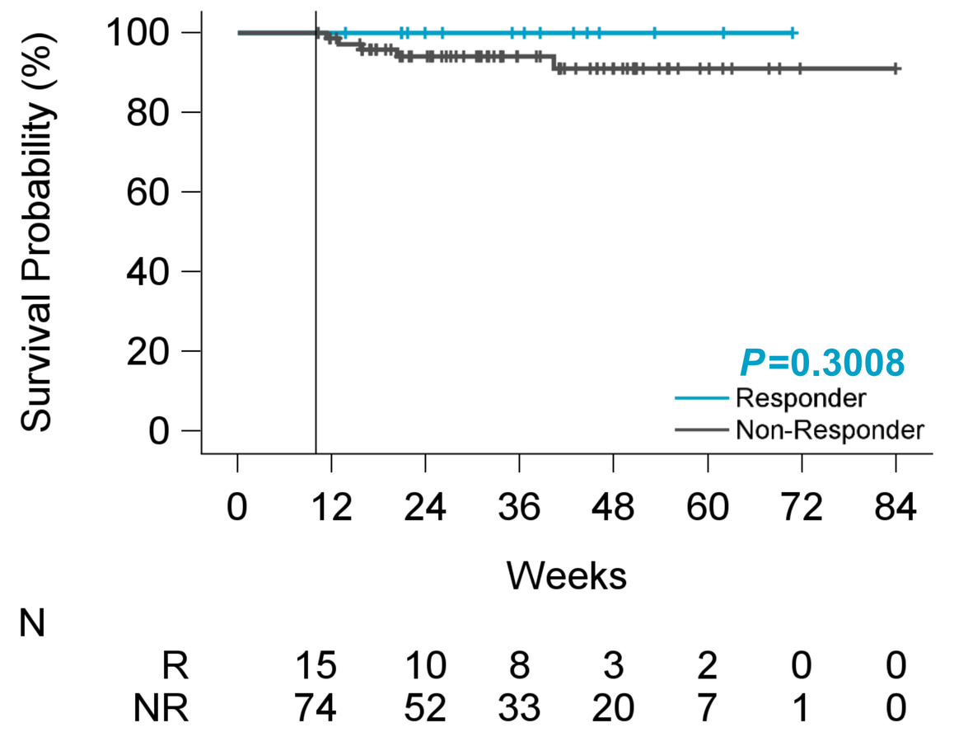
Agents used in ≥5% of patients shown. As patients may have been on multiple agents, percentages do not sum to 100%.

Spleen length reduction (by palpation) is not as prognostic as SVR (by imaging) on PAC

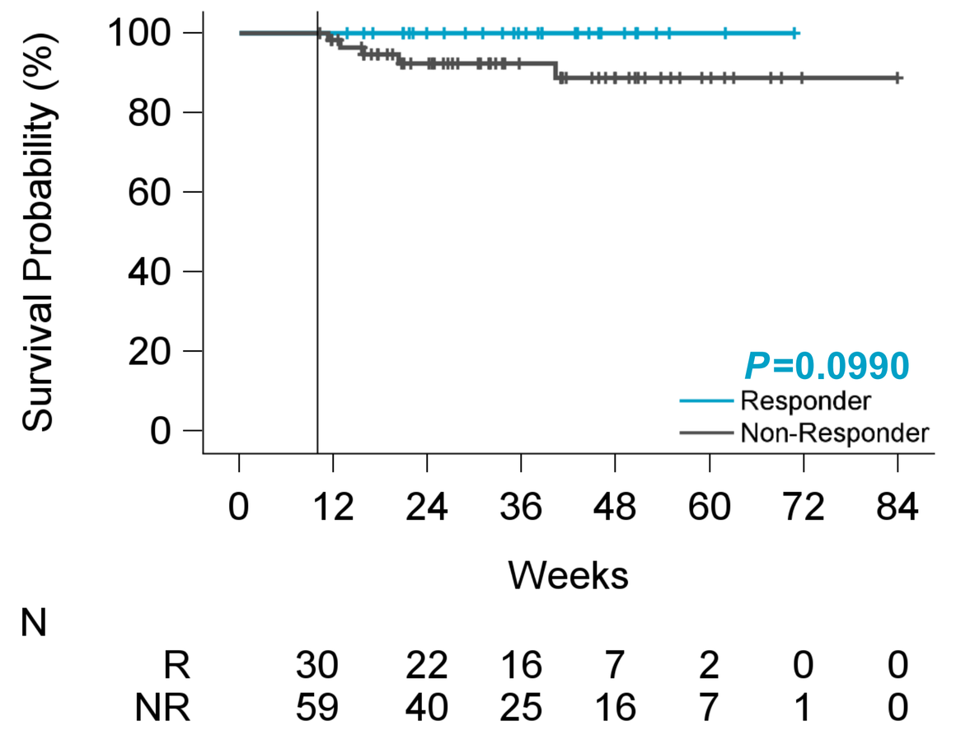
- Achieving ≥20% reduction in palpable spleen length on PAC is associated with OS benefit (HR=0.14 [95% CI: 0.02-1.26], **Figure 3**), but separation of curves is not as great as prognostication based on SVR.

Figure 3. Overall Survival Stratified by Spleen Length Reduction (by Palpation), PAC arm

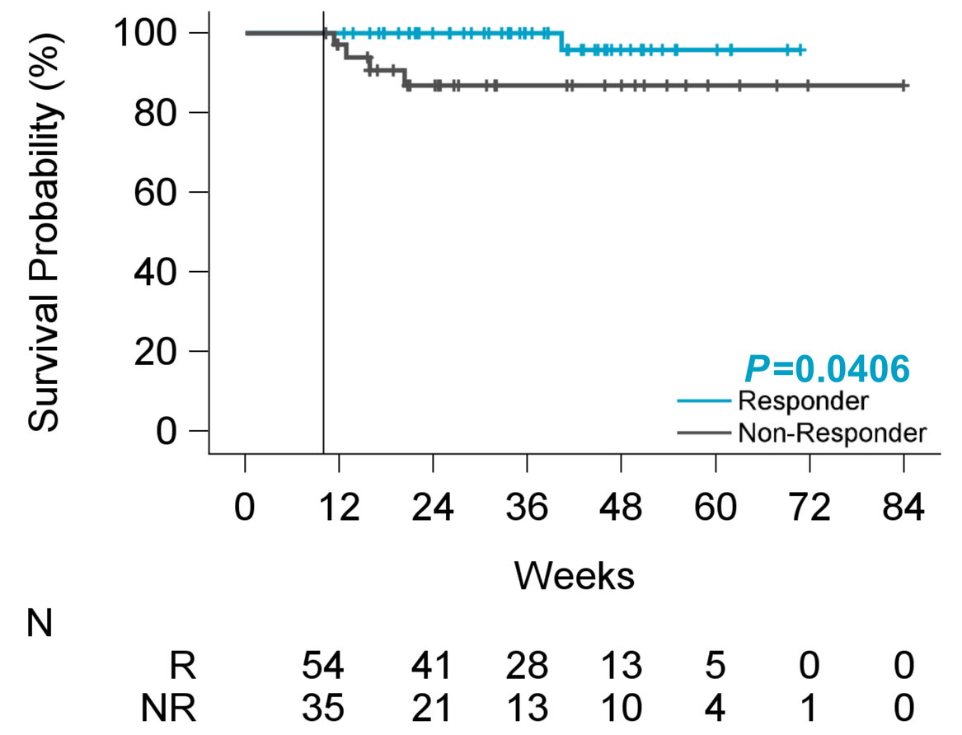
(A) OS by ≥50% length reduction



(B) OS by ≥35% length reduction



(C) OS by ≥20% length reduction



CONCLUSIONS

- In MF patients with thrombocytopenia (platelets ≤100×10⁹/L), achieving SVR ≥10% at week 12 on full-dose PAC was associated with significant OS benefit.
- By contrast, this association was not found with BAT, including patients on RUX (most at doses of 10 mg BID or less).
- As PAC can be given at full dose regardless of platelet count, it is possible that PAC may offer a unique survival advantage for MF patients with moderate or severe thrombocytopenia who achieve ≥10% spleen reduction.

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ABBREVIATIONS: BAT, best available therapy; BID, twice daily; PAC, pacritinib; OS, overall survival; RUX, ruxolitinib; SVR, spleen volume response; W&W, watch and wait.

REFERENCES: **1.** Singer et al. *J Exp Pharmacol*. 2016;8:11-19. **2.** Oh et al. *Clin Lymphoma Myeloma Leuka*. 2022;S:327 **3.** Mascarenhas et al. *JAMA Oncol*. 2018;4:652-659.

DISCLOSURES: **CH** has consulted for AbbVie, AOP, Constellation, CTI BioPharma Corp. a Sobi company, Galecto, Geron, GSK, Janssen, Keros, Morphosys, Novartis, Promedior, Sierra and Sumitomo; has participated in speakers bureaus for AbbVie, AOP, BMS, Celgene, CTI BioPharma Corp. a Sobi company, Galecto and Novartis; has ownership of Chakana Medical Limited has patents or royalties from Blood Cancer UK, BMS, Chakan Medical, Constellation, EHA, Galecto, MPN Voice and Novartis; receives honoraria from AOP, BMS, CTI BioPharma Corp. a Sobi company, Galecto, GKS and Novartis. has participated in advisory committees for Galecto and Keros. **FP** has consulted for, received honoraria from, and participated on advisory committess for AbbVie, Amgen, AOP, BMS, Celgene, CTI BioPharma Corp., a Sobi company, GSK, Karthos, Morphosys, Novartis and Sierra; and has received research funding from Imago BioSciences a subsidiary of Merck & Co., Inc. **JM** has consulted for AbbVie, Celgene/BMS, CTI BioPharma Corp., a Sobi company, Galecto, Geron, GSK, Imago, Incyte, Kartos, Karyopharm, MorphoSys, Novartis, Pfizer, PharmaEssentia, Roche and Sierra Oncology; has participated on advisory committees for AbbVie, BMS, Celgene, Constellation Pharmaceuticals, CTI BioPharma Corp., a Sobi company, Galecto, Geron, GSK, Incyte, Kartos, Karyopharm, Merck, Novartis, Pfizer, PharmaEssentia, Prelude Therapeutics has received honoraria from GSK; and has received research funding from AbbVie, BMS, Celgene, CTI BioPharma Corp., a Sobi company, Geron, Incyte, Janssen, Kartos, Karyopharm, Merck, Novartis, PharmaEssentia and Roche. **JP** has consulted for, received honoraria from, and has received funding to her institution from CTI BioPharma Corp., a Sobi company, Incyte, MorphoSys, and Sierra; and has consulted for Jubliant**. AG** has consulted for AbbVie, BMS, Celgene, Constellation Pharmaceuticals, CTI BioPharma Corp., a Sobi company, GSK, Imago Biosciences/Merck, Kartos, MorphoSys, Novartis, PharmaEssentiaand Sierra Oncology; has received research funding from Accurate Pharmaceuticals, Constellation Pharmaceuticals, CTI BioPharma Corp., a Sobi company, Imago Biosciences, Incyteand Kartos; holds equity in AbbVie; and has participated in an advisory committee for AbbVie, BMS, CTI BioPharma Corp., a Sobi company, GSK, Imago, Kartos, MorphoSys, PharmaEssentia and Rain Oncology. **J-JK** has consulted for AbbVie, and GSK; has received honoraria from AbbVie, AOP Health, BMS, Celgene, GSK, Novartis, and PharmaEssentia; has received research funding from AOP Health, and has participated in advisory boards for BMS and Inctye. **SB** and **KR-T** are employed by and have received payment of unvested equity awards as a company employee as part of an overall compensation package from CTI BioPharma Corp., a Sobi company. **RR** has consulted for BMS/Celgene, CTI BioPharma Corp., a Sobi company, Dainippon, Galecto, GSK/Sierra, Incyte, Kartos, Karyopharm, MorphoSys/Constellation, PharmaEssentia, Servier, Sumitomo and Zentalis; and has received researcg funding from Constellation, Incyte, Ryvu, Stemline and Zentalis.

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