

## Background

- NeoIT with anti-PD-1 (PD1) alone or in combination with anti-CTLA-1 (IPI+PD1) showed better event-free survival than adjuvant (adj)IT and is a standard of care for patients with stage IIIB–D melanoma<sup>1,2</sup>.
- Pathological response is predictive of recurrence; pCR (or MPR) rarely recur, however those with no- (pNR) or partial (pPR) response remain at risk (41-77% at 3 years)<sup>3</sup>.

## Objectives

We sought to build a recurrence risk assessment tool based on patient demographics, disease characteristics, pathological and imaging data.

## Methods

- Patients with resectable stage IIIB–D melanoma treated with PD1-based neoIT were included.
- Patients' demographics, disease characteristics, blood parameters, pathological and imaging data at baseline and post NeoIT, and clinical outcomes were analysed.
- A penalised multivariable logistic regression model was built to predict recurrence.
- A tool (*NeoRisk*) predicting the likelihood of recurrence for individual patients was generated.

## Results

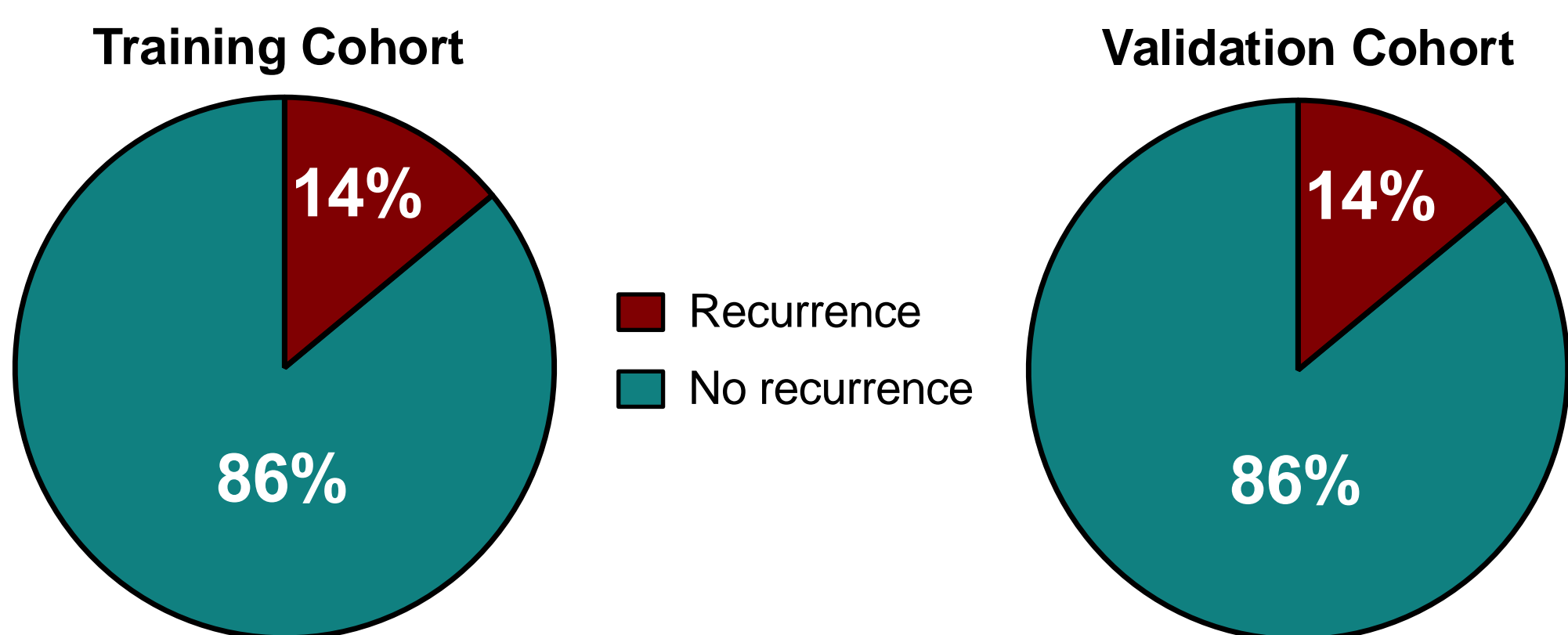


FIGURE 1. Percentage of recurrence in the training (14%; n=16/114) and validation (14%; n=7/50) cohorts.

## Results

### 1. Model Predictive of Recurrence

Predictors	AOR	95% CI	p-value
% of viable tumour cells post NeoIT	3.05	1.78 - 5.68	<b>0.0001</b>
% tumour change from baseline to post NeoIT by RECIST	2.10	1.29 - 3.4	<b>0.0027</b>
Tumour-infiltrating lymphocytes (TILs) post NeoIT			
Absent	1		
Mild	0.67	0.31 - 1.42	0.2886
Moderate	0.10	0.03 - 0.3	<b>&lt;0.0001</b>
Marked	0.36	0.18 - 0.73	<b>0.0041</b>
Not assessed	0.37	0.13 - 0.94	<b>0.0361</b>

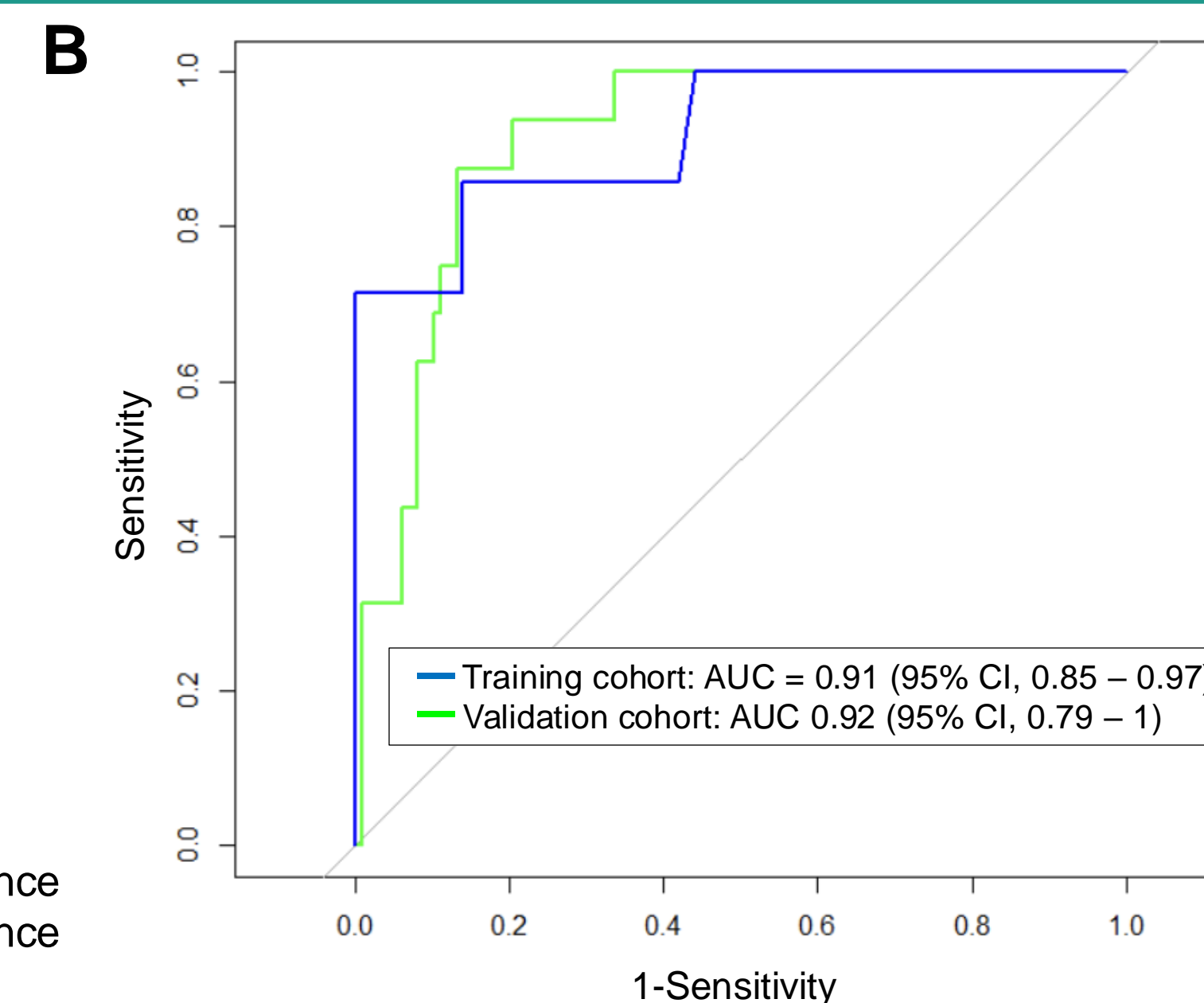


FIGURE 2. Model predictive of recurrence post NeoIT. (A) Clinical, pathological and imaging predictors of recurrence (AOR, adjusted odds ratio). (B) The combination of clinical, pathological and imaging data can accurately predict recurrence (training cohort, AUC=0.91; validation cohort, AUC=0.92).

### 2. NeoRisk: recurrence prediction for individual patients

#### Patient A

Choose the Prediction Model:  
Baseline + Week 6 (With Surgery; Recurrence)

Baseline Target Lesions Diameter (mm): 24

Week 6 Target Lesions Diameter (mm): 27

Post-Treatment Percentage of Viable Tumour: 55

Post-treatment Tumour infiltrating lymphocytes: mild

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**Risk of recurrence = 80%**

#### Patient B

Choose the Prediction Model:  
Baseline + Week 6 (With Surgery; Recurrence)

Baseline Target Lesions Diameter (mm): 31

Week 6 Target Lesions Diameter (mm): 27

Post-Treatment Percentage of Viable Tumour: 55

Post-treatment Tumour infiltrating lymphocytes: moderate

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**Risk of recurrence = 24%**

**FIGURE 3. NeoRisk: recurrence prediction for individual patients.**

**Patient A:** 1) % of viable tumour cells post NeoIT **55%** (pNR); 2) % tumour change from baseline to post NeoIT by RECIST **+12.5%** (stable disease); 3) TILs post NeoIT **mild**. **Risk of recurrence = 80%**.

**Patient B:** 1) % of viable tumour cells post NeoIT **55%** (pNR); 2) % tumour change from baseline to post NeoIT by RECIST **-13%** (stable disease); 3) TILs post NeoIT **moderate**. **Risk of recurrence = 24%**.

## Conclusions

*NeoRisk* can accurately predict recurrence after NeoIT, which may help tailor adjuvant treatment and radiological surveillance interval based on the predicted risk of recurrence for individual patients.

## References

- Patel SP, et al. NEJM 2023.
- Blank CU, et al. NEJM 2024.
- Menzies AM, et al. Nat Med 2021.

## Acknowledgements

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