Neutrophil-to-Lymphocyte Ratio as a practical alternative to mHLA-DR measurement in delayed sepsis-induced immunosuppression

Thomas Lafon[1], Fabienne Venet[2,3], Anne-Claire Lukaszewicz[4], Guillaume Monneret[2]

Supplementary material

Supplementary tables

Table S1

	D-28 mortality N=301	**Alive at D28 N=722**	***p-value***
Monocytes HLA-DR AB/C, median [Q1-Q3]	5359 [3154-8095]	7011 [4043-11455]	*<0.001*
NLR, median [Q1-Q3]	17 [8-27]	10 [6-16]	*<0.001*
Neutrophils G/L, median [Q1-Q3]	14.0 [9.5-20.4]	11.0 [7.7-15.8]	<0.001
Lymphocytes G/L, median [Q1-Q3]	1.0 [0.5-1.5]	1.1 [0.7-1.5]	*0.057*

	ICU-acquired infection N=190	**No infection N=833**	***p-value***
Monocytes HLA-DR AB/C, median [Q1-Q3]	4985 [3129-7247]	7392 [4321-12022]	*<0.001*
NLR, median [Q1-Q3]	13 [8-22]	10 [6-16]	*<0.001*
Neutrophils G/L, median [Q1-Q3]	13.9 [8.9-18.9]	10.7 [7.7-15.7]	<0.001
Lymphocytes G/L, median [Q1-Q3]	1.0 [0.6-1.4]	1.1 [0.7-1.5]	*0.135*

Table S1. Day 7 immunological parameter values in 1,023 patients with septic shock according to 28-day mortality and ICU-acquired infection (P values: Mann–Whitney test).

Table S2

	Sensitivity (%) [95% CI]	Specificity (%) [95% CI]	PPV (%) [95% CI]	NPV (%) [95% CI]
D5/D7	65 [60-70]	61 [54-68]	73 [67-78]	52 [46-59]

Table S2. Sensitivity, specificity, positive predictive value, negative value for NLR > 10 to predict mHLA-DR < 8 000 AB/C at D7. Area Under Curve = 0,68 [0,63 – 0,73], p < 0,001.

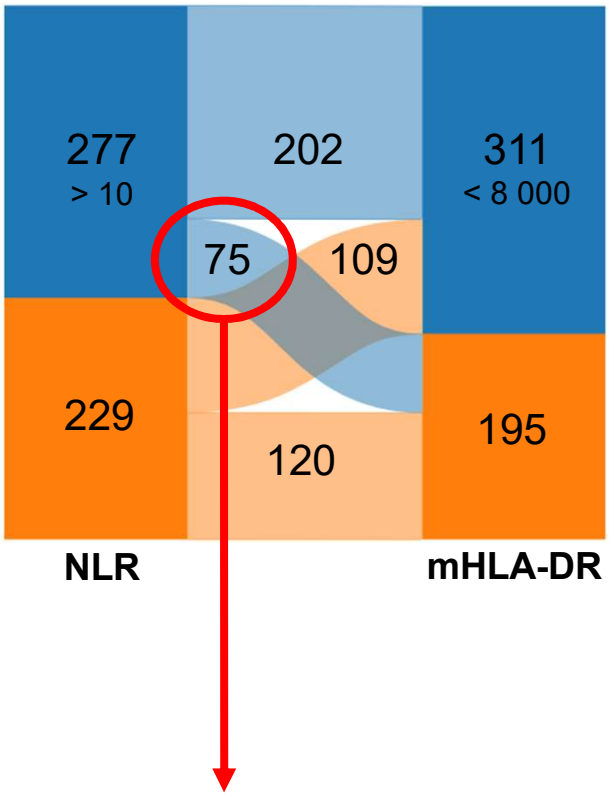
Table S3

	ICM 2025 cohort N=1023	Validation cohort N=54
Age (y), median [Q1-Q3]	68 [58-77]	70 [58-81]
Male, (%)	656 (64%)	33 (61%)
Charlson comorbidities index, median [Q1-Q3]	2 [1-4]	2 [1-4]
Body mass index, median [Q1-Q3]	26 [23-30]	26 [23-30]
SAPS II, median [Q1-Q3]	58 [47-72]	54 [44-68]
SOFA score, median [Q1-Q3]	10 [8-12]	9 [7-11]
Lactates (mmol/L), median [Q1-Q3]	2.9 [2.1-4.8]	3.8 [2.4-5.6]
Outcome		
ICU-acquired infection, (%)	190 (19%)	10 (18%)
D-28 mortality	301 (29%)	9 (17%)
ICU length of stay, median [Q1-Q3]	9 [4-17]	6 [3-14]
Hospital length of stay, median [Q1-Q3]	27 [12-43]	22 [10-33]

Table S2. Main clinical characteristics and outcomes of patients from reference #4 (Intensive Care Medicine 2025; 51:1820–1832) and patients included since that publication (validation cohort).

Supplementary figures

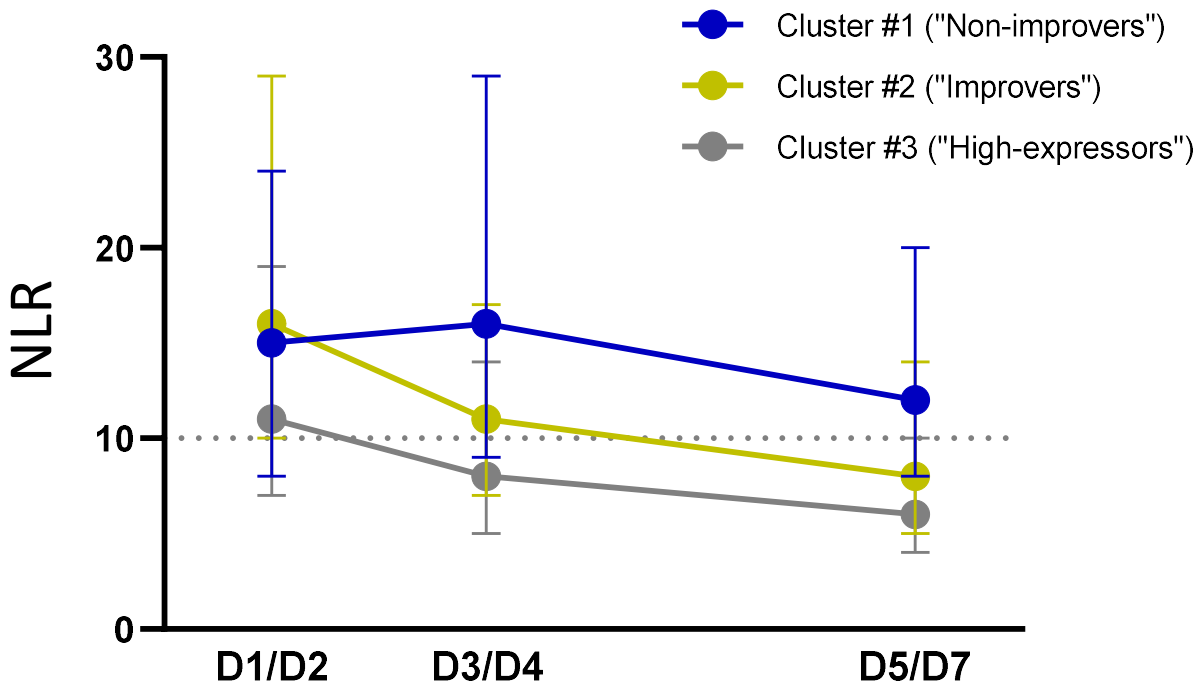
Figure S1



	Median [Q1-Q3]
Neutrophils (G/L)	13 [10-17]
Lymphocytes (G/L)	**0.84 [0.6-1.1]**
NLR	16 [10-25]

Figure S1. Day 7 immunological parameter values in 75 discordant patients having high NLR (> 10) but > 8 000 AB/C mHLA-DR.

Figure S2



	Cluster #1 N=467	Cluster #2 N=283	Cluster #3 N=92	*p-value*
NLR D1/D2, median [Q1-Q3]	15 [8-24]	16 [10-29]	11 [7-19]	*0.132*
NLR D3/D4, median [Q1-Q3]	16 [9-29]	11 [7-17]	8 [5-14]	*<0.001*
NLR D5/D7, median [Q1-Q3]	12 [8-20]	8 [5-14]	6 [4-10]	*<0.001*

Figure S2. NLR values during one-week monitoring across mHLA-DR trajectory clusters defined in reference #4 (Intensive Care Medicine 2025; 51:1820–1832). The “non-improvers” cluster comprised patients with persistently low mHLA-DR throughout the entire monitoring period.

Figure S3

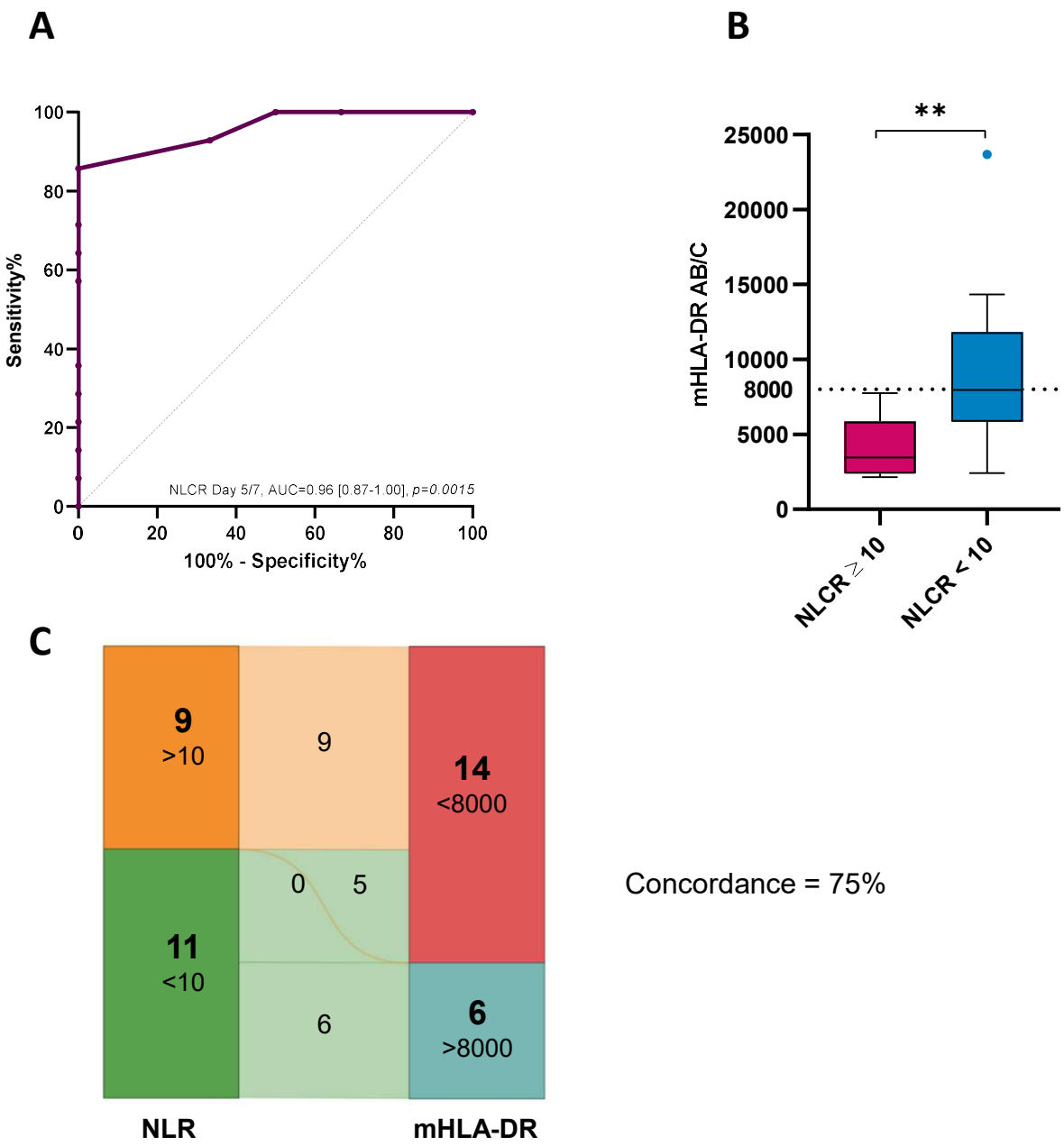


Figure S3. NLR and mHLA-DR values in validation cohort (20 of 54 patients for whom D-7 values were available). (A) ROC analysis (NLR values to predict mHL6-DR < 8 000 AB/C). **(B)** mHLA-DR levels according to neutrophil-to-lymphocyte ratio (NLR), stratified by a threshold of 10. mHLA-DR values are expressed as antibodies bound per cell (AB/C) and presented as boxplots showing the median and interquartile range (Q1–Q3). ** $p < 0.01$, Mann–Whitney test. **(C)** Alluvial plot illustrating the concordance between patient classification based on NLR (high vs. low, threshold = 10) and mHLA-DR (high vs. low, threshold = 8,000 AB/C).