

## [Supplemental Digital Content 1](#)

Supplemental material represents the internal validation bootstrapping results using R software (R Foundation for Statistical Computing, Vienna, Austria) for the original multivariable algorithms in predicting clinically significant postoperative cardio-respiratory and hematological events.

### 1. [Postoperative Respiratory/Cardiac Events](#), 500 resamples

	index.orig	training	test	optimism	index.corrected
Dxy	0.577493687	0.598066095	0.563564394	0.034501701	0.542991986
R2	0.290004214	0.314974115	0.272034114	0.042940001	0.247064213
Intercept	0.000000000	0.000000000	-0.099240550	0.099240550	-0.099240550
Slope	1.000000000	1.000000000	0.913120405	0.086879595	0.913120405
Emax	0.000000000	0.000000000	0.038245264	0.038245264	0.038245264
D	0.174710311	0.192243140	0.162679913	0.029563227	0.145147084
U	-0.008888889	-0.008888889	0.003566820	-0.012455708	0.003566820
Q	0.183599200	0.201132029	0.159113093	0.042018935	0.141580265
B	0.095350470	0.092036245	0.098624734	-0.006588489	0.101938959

Logistic Regression Model (lrm):

```
lrm(formula = RESP_CAR ~ WEIGHT10 + ASA34 + PRBC60 + INTRAOP_,  
     x = TRUE, y = TRUE)
```

Frequencies of Responses:

```
  0  1  
192 33
```

	Obs	Max	Deriv	Model L.R.	d.f.	P	C	Dxy
	225		8e-10	40.31	4	0	0.789	0.577
	Gamma		Tau-a	R2	Brier			
	0.628		0.145	0.29	0.095			

	Coef	S.E.	Wald Z	P
Intercept	-3.676	0.5212	-7.05	0.0000
WEIGHT10	0.979	0.4899	2.00	0.0457
ASA34	1.633	0.4656	3.51	0.0005
PRBC60	1.825	0.5165	3.53	0.0004
INTRAOP_	1.260	0.4611	2.73	0.0063

### 2. [Postoperative Hematological Events](#), 500 resamples

	index.orig	training	test	optimism	index.corrected
Dxy	0.566975250	0.570139926	0.556082751	0.014057175	0.552918075
R2	0.357850705	0.373261467	0.340113260	0.033148208	0.324702498
Intercept	0.000000000	0.000000000	-0.084359920	0.084359920	-0.084359920
Slope	1.000000000	1.000000000	0.909064501	0.090935499	0.909064501
Emax	0.000000000	0.000000000	0.036188924	0.036188924	0.036188924
D	0.285887063	0.301766915	0.269475572	0.032291343	0.253595721

U	-0.008888889	-0.008888889	0.009417573	-0.018306461	0.009417573
Q	0.294775952	0.310655804	0.260058000	0.050597804	0.244178148
B	0.147014522	0.143521440	0.150969092	-0.007447652	0.154462174

Logistic Regression Model (lrm):

```
lrm(formula = HEMATOLO ~ WEIGHT10 + PRBC60 + HEMOSTAT + TXA_NOT,
     x = TRUE, y = TRUE)
```

Frequencies of Responses:

	0	1
158	67	

Obs	Max	Deriv	Model L.R.	d.f.	P	C	Dxy
225		2e-07	65.32	4	0	0.783	0.567
Gamma		Tau-a	R2	Brier			
0.654		0.238	0.358	0.147			

	Coef	S.E.	Wald Z	P
Intercept	-2.1193	0.3133	-6.76	0.0000
WEIGHT10	0.7609	0.3586	2.12	0.0339
PRBC60	2.2193	0.6134	3.62	0.0003
HEMOSTAT	1.6611	0.6824	2.43	0.0149
TXA_NOT	0.9602	0.3518	2.73	0.0063

Glossary of terms:

Dxy = Somers' statistic indicating the difference between concordance and discordance probabilities, where Dxy of 0 reflects a model making random predictions and Dxy of 1 a model where the predictions are perfectly discriminating.

Emax = Emax is the maximum absolute calibration error on a probability scale.

R2 = Nagelkerke index or predictive strength of the model.

D = Discrimination.

U = Unreliability.

Q = Quality (Q = D - U).

B = Brier's index or score assessing the performance of the predictive model, with a Brier's score of 0 being best score achievable and a score of 1 indicating the worst score achievable.

C = predictive accuracy or c-index (analogous to area under the curve).

LR = global log likelihood ratio statistic for testing the importance of predictors in the model.

Optimism = a derived measure of over-fitting of the predictive logistic regression model based on bootstrapping

validation.

Index corrected = measure of corrected performance of the original model.

L.R. = likelihood ratio test statistic.

d.f. = degrees of freedom.

C = concordance statistic or discriminative ability of the model.

Coef = coefficient.

S.E. = standard error.

Wald = test statistic for assessing whether the predictor or set of predictors is significant where Z is the Coef/S.E.

gamma = gamma distribution used in the bootstrap resampling method.

tau-a = Kendall's measure of concordance.

RESP\_CAR = Postoperative cardiorespiratory event (as defined in text of the article).

HEMATOLO = Postoperative hematological event (as defined in text of the article).

WEIGHT10 = body weight < 10kg

ASA34 = ASA status 3 or 4.

PRBC60 = packed erythrocyte transfusion > 60 ml/kg.

INTRAOP = intraoperative complication ( as defined in appendix 1 of the article).

TXA\_NOT = tranexamic acid not administered.