

Supplemental material 4

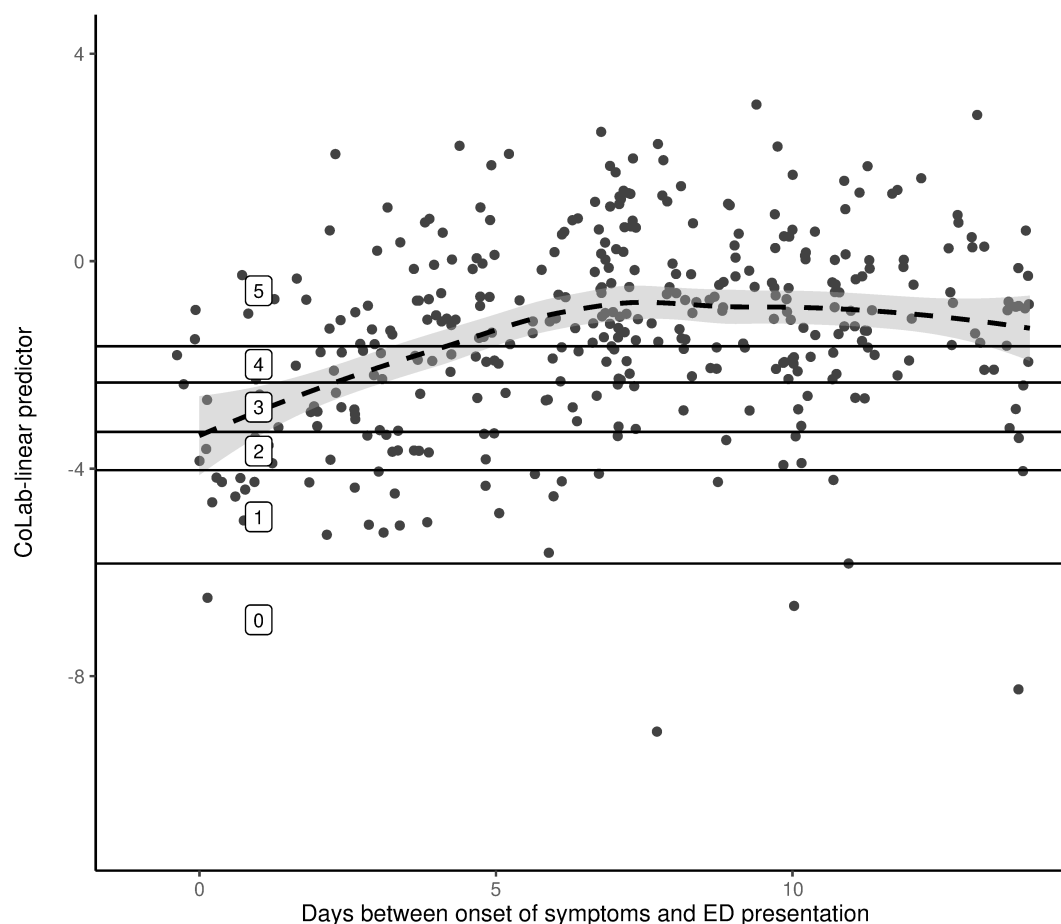


Figure 1: Association between the CoLab-linear predictor and the duration of COVID-19-related symptoms.

For all PCR-positive ED presentations in the development and temporal validation dataset, the CoLab-linear predict is plotted against the duration of COVID-related symptoms as registered in the electronic patient records. Patients with unknown duration are not plotted. Patients without symptoms were plotted at 0 days. The solid horizontal lines represent the CoLab-score thresholds, the dashed line is a LOESS regression curve with 95% CI. As the duration of symptoms is an integer, some random jitter was added to the days, for visualization purposes. Note that only the first 14 days are shown in this graph.

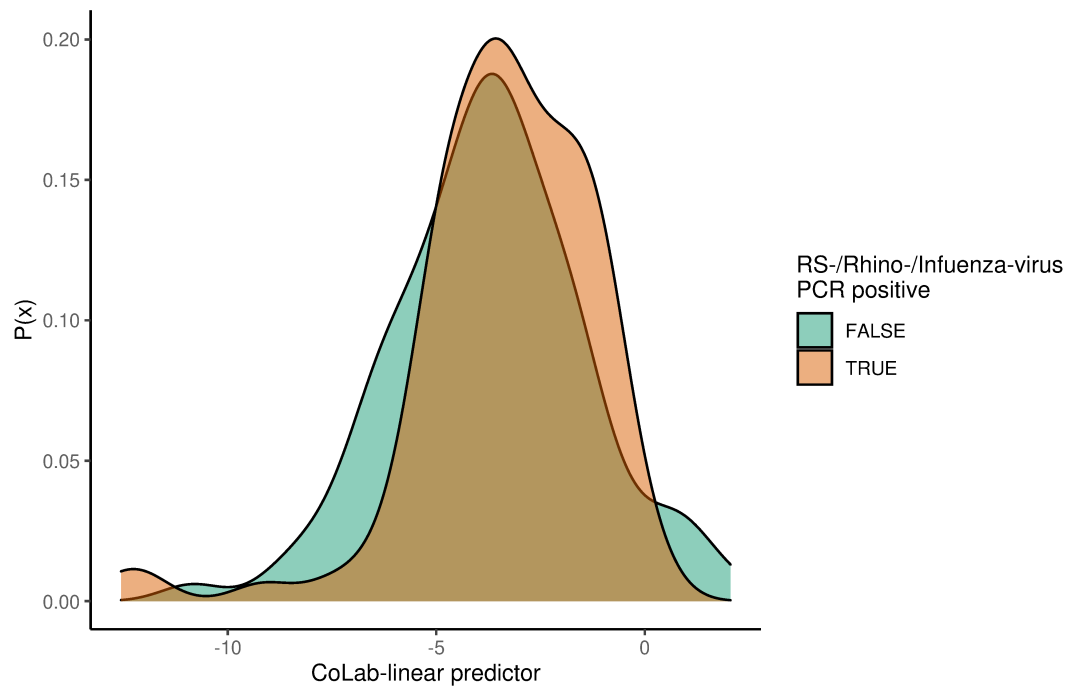


Figure 2: Probability density plot of CoLab-score for RS-, Rhino- and Influenza-virus PCR tested ED patients.

For 183 ED presentations that were PCR tested for either RS-, Rhino- and Influenza-virus the CoLab-score was calculated. 91 presentations were PCR positive, 92 were PCR negative. The CoLab-score is only marginally elevated for PCR positive patients, the area under the ROC-curve in separating both groups is 0.573 (95% CI: 0.4896-0.6563).

Inclusion criterion	Cases/controls (prevalence)	AUC
Temporal validation (reference)	1039/14080 (7.4%)	0.916 (0.906 - 0.927)
Only first presentations, re-presentations are excluded	937/11166 (8.4%)	0.919 (0.909 - 0.930)
Only PCR-tested presentations	372/4062 (9.2%)	0.840 (0.817 - 0.862)

CoLab-score	Validation set	Sensitivity	Specificity	PPV	NPV	TP	TN	FP	FN
0	Reference	0.967 (0.956 - 0.978)	0.420 (0.411 - 0.428)	0.117 (0.115 - 0.119)	0.994 (0.992 - 0.996)	1005 (993 - 1016)	5476 (5366 - 5587)	7565 (7454 - 7675)	34 (23 - 46)
	First presentations	0.968 (0.956 - 0.979)	0.416 (0.406 - 0.426)	0.132 (0.130 - 0.134)	0.993 (0.990 - 0.995)	907 (896 - 917)	4259 (4156 - 4353)	5970 (5876 - 6073)	30 (20 - 41)
	PCR-tested presentations	0.946 (0.922 - 0.968)	0.353 (0.338 - 0.368)	0.129 (0.125 - 0.132)	0.985 (0.979 - 0.991)	352 (343 - 360)	1303 (1246 - 1359)	2387 (2331 - 2444)	20 (12 - 29)
≤ 1	Reference	0.888 (0.870 - 0.908)	0.791 (0.783 - 0.798)	0.253 (0.245 - 0.261)	0.989 (0.987 - 0.991)	923 (904 - 943)	10311 (10215 - 10401)	2730 (2640 - 2826)	116 (96 - 135)
	First presentations	0.890 (0.870 - 0.908)	0.793 (0.785 - 0.801)	0.282 (0.273 - 0.292)	0.987 (0.985 - 0.990)	834 (815 - 851)	8112 (8030 - 8194)	2117 (2035 - 2199)	103 (86 - 122)
	PCR-tested presentations	0.852 (0.817 - 0.887)	0.671 (0.656 - 0.686)	0.207 (0.197 - 0.217)	0.978 (0.973 - 0.983)	317 (304 - 330)	2477 (2421 - 2533)	1213 (1157 - 1269)	55 (42 - 68)
≤ 2	Reference	0.820 (0.796 - 0.843)	0.894 (0.889 - 0.899)	0.382 (0.367 - 0.396)	0.984 (0.982 - 0.986)	852 (827 - 876)	11661 (11591 - 11729)	1380 (1312 - 1450)	187 (163 - 212)
	First presentations	0.824 (0.798 - 0.845)	0.898 (0.892 - 0.904)	0.426 (0.410 - 0.441)	0.982 (0.980 - 0.985)	772 (748 - 792)	9187 (9127 - 9249)	1042 (980 - 1102)	165 (145 - 189)
	PCR-tested presentations	0.734 (0.688 - 0.777)	0.800 (0.786 - 0.812)	0.270 (0.252 - 0.287)	0.968 (0.962 - 0.973)	273 (256 - 289)	2951 (2902 - 2997)	739 (693 - 788)	99 (83 - 116)
≤ 3	Reference	0.710 (0.682 - 0.738)	0.962 (0.958 - 0.965)	0.596 (0.573 - 0.618)	0.977 (0.974 - 0.979)	738 (709 - 767)	12540 (12496 - 12582)	501 (459 - 545)	301 (272 - 330)
	First presentations	0.716 (0.687 - 0.744)	0.966 (0.962 - 0.969)	0.658 (0.633 - 0.682)	0.974 (0.971 - 0.976)	671 (644 - 697)	9880 (9844 - 9915)	349 (314 - 385)	266 (240 - 293)
	PCR-tested presentations	0.591 (0.540 - 0.640)	0.911 (0.902 - 0.921)	0.403 (0.370 - 0.433)	0.957 (0.952 - 0.962)	220 (201 - 238)	3363 (3328 - 3397)	327 (293 - 362)	152 (134 - 171)
≤ 4	Reference	0.585 (0.556 - 0.615)	0.984 (0.982 - 0.987)	0.750 (0.724 - 0.778)	0.968 (0.965 - 0.970)	608 (578 - 639)	12838 (12811 - 12866)	203 (175 - 230)	431 (400 - 461)
	First presentations	0.590 (0.558 - 0.621)	0.987 (0.985 - 0.989)	0.805 (0.776 - 0.832)	0.963 (0.961 - 0.966)	553 (523 - 582)	10095 (10071 - 10117)	134 (112 - 158)	384 (355 - 414)
	PCR-tested presentations	0.452 (0.401 - 0.503)	0.959 (0.953 - 0.965)	0.526 (0.480 - 0.575)	0.945 (0.941 - 0.950)	168 (149 - 187)	3539 (3516 - 3562)	151 (128 - 174)	204 (185 - 223)

Table 1: Sensitivity analysis of the CoLab-score in the temporal validation dataset using different inclusion criteria.

Sensitivities, specificities, positive predictive values (PPV), negative predictive values (NPV), true positives (TP), true negatives (TN), false positives (FP) and false negatives (FN) are shown for fixed cut-offs (CoLab-score 0 till ≤ 4) with bootstrapped 95% confidence intervals in parentheses. The temporal validation dataset is used to compare the performance of the CoLab-score with inclusion criteria that differ from the development dataset. The first line shows the performance of the temporal validation dataset with the original inclusion criteria as specified in Figure 1B. The second line shows the performance of the CoLab-score when all re-presentations are excluded (i.e. no repeated presentations). The third line shows the performance of the CoLab-score in the subgroup of patients that underwent PCR-testing.