**Supplementary Table 3**. Univariable and multivariable generalized additive models of SpO2 during the preoperative assessment.

| **Variable** | **OR** | **95% CI** | **p-value** | **Deviance explained** |
| --- | --- | --- | --- | --- |
| **BMI only model** | | | | |
| *s(BMI)* |  | | <0.001 | 32.9% |
| **OSA model** | | | | |
| *Obstructive sleep apnea* | | | | 10.3% |
| No | Reference | | |
| Yes | 0.55 | 0.44, 0.68 | <0.001 |
| **Atelectasis percent only model** | | | | |
| *Atelectasis percent* | | | | 62.6% |
| 0% | Reference | | |
| 2.5% | 0.58 | 0.47, 0.72 | <0.001 |
| 5% | 0.45 | 0.38, 0.53 | <0.001 |
| 7.5% | 0.42 | 0.37, 0.47 | <0.001 |
| 10% | 0.37 | 0.29, 0.47 | <0.001 |
| 12.5% | 0.42 | 0.24, 0.75 | 0.004 |
| 15% | 0.37 | 0.28, 0.49 | <0.001 |
| 17.5% | 0.30 | 0.24, 0.36 | <0.001 |
| **BMI + OSA model** | | | | |
| *Obstructive sleep apnea* | | | | 38.8% |
| No | Reference | | |
| Yes | 0.64 | 0.53, 0.77 | <0.001 |
| *s(BMI)* |  | | <0.001 |
| **BMI + Atelectasis percent model** | | | | |
| *Atelectasis percent* | | | | 62.9% |
| 0% | Reference | | |
| 2.5% | 0.58 | 0.47, 0.72 | <0.001 |
| 5% | 0.47 | 0.39, 0.56 | <0.001 |
| 7.5% | 0.44 | 0.38, 0.50 | <0.001 |
| 10% | 0.39 | 0.30, 0.50 | <0.001 |
| 12.5% | 0.45 | 0.25, 0.80 | 0.008 |
| 15% | 0.38 | 0.29, 0.51 | <0.001 |
| 17.5% | 0.32 | 0.26, 0.41 | <0.001 |
| *s(BMI)* |  | | 0.2 |
| **BMI + OSA + Atelectasis percent model** | | | | |
| *Obstructive sleep apnea* | | | | 63.1% |
| No | Reference | | |
| Yes | 0.93 | 0.79, 1.08 | 0.3 |
| *Atelectasis percent* | | | |
| 0% | Reference | | |
| 2.5% | 0.59 | 0.48, 0.74 | <0.001 |
| 5% | 0.47 | 0.39, 0.57 | <0.001 |
| 7.5% | 0.44 | 0.38, 0.51 | <0.001 |
| 10% | 0.40 | 0.31, 0.51 | <0.001 |
| 12.5% | 0.45 | 0.25, 0.80 | 0.008 |
| 15% | 0.39 | 0.29, 0.53 | <0.001 |
| 17.5% | 0.33 | 0.26, 0.42 | <0.001 |
| *s(BMI)* |  | | 0.2 |
| **BMI + OSA + age + sex + hemoglobin + altitude model** | | | | |
| *Sex* | | | | 39.5% |
| Woman | Reference | | |
| Man | 1.14 | 0.91, 1.42 | 0.3 |
| *Age* | 1.00 | 0.99, 1.00 | 0.7 |
| *Obstructive sleep apnea* | | | |
| No | Reference | | |
| Yes | 0.62 | 0.51, 0.76 | <0.001 |
| *Hemoglobin* | 0.98 | 0.93, 1.03 | 0.4 |
| *Mean altitude of state of residence* | | | |
| Low altitude | Reference | | |
| Moderate altitude | 0.97 | 0.82, 1.16 | 0.8 |
| *s(BMI)* |  | | <0.001 |
| **Fully adjusted model** | | | | |
| *Sex* | | | | 63.8% |
| Woman | Reference | | |
| Man | 1.05 | 0.88, 1.25 | 0.6 |
| *Age* | 1.00 | 0.99, 1.00 | 0.8 |
| *Obstructive sleep apnea* | | | |
| No | Reference | | |
| Yes | 0.91 | 0.77, 1.08 | 0.3 |
| *Hemoglobin* | 1.00 | 0.96, 1.05 | 0.8 |
| *Mean altitude of state of residence* | | | |
| Low altitude | Reference | | |
| Moderate altitude | 0.95 | 0.83, 1.09 | 0.5 |
| *Atelectasis percent* | | | |
| 0% | Reference | | |
| 2.5% | 0.60 | 0.48, 0.74 | <0.001 |
| 5% | 0.47 | 0.39, 0.56 | <0.001 |
| 7.5% | 0.44 | 0.38, 0.51 | <0.001 |
| 10% | 0.39 | 0.30, 0.51 | <0.001 |
| 12.5% | 0.45 | 0.25, 0.81 | 0.008 |
| 15% | 0.39 | 0.29, 0.53 | <0.001 |
| 17.5% | 0.33 | 0.26, 0.42 | <0.001 |
| *s(BMI)* |  | | 0.3 |
|  | | | |  |

Smooth terms are shown as the name of the variable inside parentheses, preceded by an s— i.e., s( ) —. The optimal k-value for the BMI term was determined at k=5. Odds ratios are not presented for smooth terms

Abbreviations: 95% confidence interval (95%CI), body mass index (BMI), obstructive sleep apnea (OSA), odds ratio (OR).