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| **eTable 6a.** Bayesian mixed model with a random factor for individual patient and monotonic effect for intra–abdominal pressure with **respiratory driving pressure** as dependent variable and group as main independent variable. | | | | |
| Variable | **Estimate** | **Std Error** | **Lower 95% CI** | **Upper**  **95% CI** |
| **(Intercept)** | 5.95 | 2.12 | 1.81 | 10.26 |
| **Group (Targeted PEEP)** | - 2.50 | 0.46 | - 3.42 | - 1.62 |
| **Intra–abdominal pressure** (mm Hg) | 3.24 | 0.49 | 2.28 | 4.21 |
| **Baseline transpulmonary**  **driving pressure** | 0.45 | 0.07 | 0.32 | 0.58 |
| **Body Mass Index** (Kg ∙ m-2) | 0.04 | 0.08 | - 0.11 | 0.19 |
| **Interaction Group\* Intra–abdominal pressure** | - 1.16 | 0.69 | - 2.50 | 0.14 |
| *Widely Applicable Information Criterion*: 766.18; *PEEP*, positive end–expiratory pressure; *CI,* Credible Interval; | | | | |

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| **eTable 6b.** Bayesian model simplex parameters that estimate the normalized distances between consecutive predictor categories. | | | | |
| Parameter | **Estimate** | **Std Error** | **Lower 95% CI** | **Upper 95% CI** |
| **Intra–abdominal pressure [1] (8 to 9 mm Hg)** | 0.11 | 0.09 | 0.00 | 0.32 |
| **Intra–abdominal pressure [2] (9 to 10 mm Hg)** | 0.11 | 0.09 | 0.00 | 0.32 |
| **Intra–abdominal pressure [3] (10 to 11 mm Hg)** | 0.11 | 0.09 | 0.00 | 0.33 |
| **Intra–abdominal pressure [4] (11 to 12 mm Hg)** | 0.11 | 0.09 | 0.00 | 0.32 |
| **Intra–abdominal pressure [5] (12 to 13 mm Hg)** | 0.19 | 0.14 | 0.01 | 0.50 |
| **Intra–abdominal pressure [5] (13 to 14 mm Hg)** | 0.19 | 0.14 | 0.01 | 0.51 |
| **Intra–abdominal pressure [5] (14 to 15 mm Hg)** | 0.19 | 0.14 | 0.01 | 0.50 |
| **Group\*Intra–abdominal pressure [1]** | 0.14 | 0.12 | 0.00 | 0.45 |
| **Group\*Intra–abdominal pressure [2]** | 0.14 | 0.12 | 0.00 | 0.44 |
| **Group\*Intra–abdominal pressure [3]** | 0.14 | 0.12 | 0.00 | 0.43 |
| **Group\*Intra–abdominal pressure [4]** | 0.14 | 0.12 | 0.00 | 0.45 |
| **Group\*Intra–abdominal pressure [5]** | 0.15 | 0.12 | 0.00 | 0.46 |
| **Group\*Intra–abdominal pressure [6]** | 0.15 | 0.13 | 0.00 | 0.45 |
| **Group\*Intra–abdominal pressure [7]** | 0.15 | 0.12 | 0.00 | 0.46 |
| *Widely Applicable Information Criterion (WAIC)*: 783.84; *CI,* Credible Interval; | | | | |