Worldwide audit of blood transfusion practice in critically ill patients
Jean-Louis Vincent et al on behalf of the ICON Investigators

ADDITIONAL FILE 2
Table S1. Patients’ characteristics, outcome, and RBC transfusion according to geographic region

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Africa</th>
<th>Middle East</th>
<th>South America</th>
<th>North America</th>
<th>West Europe</th>
<th>East Europe</th>
<th>Oceania</th>
<th>East &amp; Southeast Asia</th>
<th>South Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean ± SD</td>
<td>48.1±18.9</td>
<td>55.1±20.6</td>
<td>58.4±20.2</td>
<td>58.7±18.4</td>
<td>62.6±17.1</td>
<td>60.3±16.9</td>
<td>58.3±18.0</td>
<td>59.3±18.2</td>
<td>54.7±17.0</td>
</tr>
<tr>
<td>Sex, male, n (%)</td>
<td>81 (62.8)</td>
<td>207 (56.4)</td>
<td>468 (52.7)</td>
<td>384 (55.2)</td>
<td>2469 (61.1)</td>
<td>616 (56.9)</td>
<td>260 (59.8)</td>
<td>532 (60.0)</td>
<td>652 (71.0)</td>
</tr>
<tr>
<td>Any comorbidity, n (%)</td>
<td>37 (28.5)</td>
<td>181 (49.1)</td>
<td>393 (43.6)</td>
<td>386 (55.0)</td>
<td>1968 (48.2)</td>
<td>527 (48.3)</td>
<td>180 (40.0)</td>
<td>372 (41.5)</td>
<td>314 (33.5)</td>
</tr>
<tr>
<td>Severity scores on admission to the ICU, mean ± SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAPS II score</td>
<td>38.0±16.6</td>
<td>43.9±20.1</td>
<td>42.9±18.0</td>
<td>36.6±16.4</td>
<td>43.1±16.4</td>
<td>43.1±17.5</td>
<td>41.4±18.1</td>
<td>44.3±16.6</td>
<td>31.7±16.7</td>
</tr>
<tr>
<td>SOFA score</td>
<td>6.4±4.4</td>
<td>7.4±4.3</td>
<td>6.0±4.2</td>
<td>5.9±4.7</td>
<td>6.6±4.1</td>
<td>6.3±4.2</td>
<td>7.0±3.8</td>
<td>7.4±4.4</td>
<td>4.3±3.8</td>
</tr>
<tr>
<td>Sepsis in the ICU</td>
<td>38 (29.2)</td>
<td>151 (40.9)</td>
<td>303 (33.6)</td>
<td>147 (20.6)</td>
<td>1357 (33.2)</td>
<td>336 (30.8)</td>
<td>135 (30.8)</td>
<td>372 (41.5)</td>
<td>134 (14.3)</td>
</tr>
<tr>
<td>Mortality rates, n (%)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-hospital</td>
<td>24 (20.9)</td>
<td>126 (36.1)</td>
<td>231 (29.6)</td>
<td>92 (13.2)</td>
<td>890 (22.6)</td>
<td>284 (27.0)</td>
<td>60 (13.8)</td>
<td>189 (22.8)</td>
<td>110 (13.9)</td>
</tr>
<tr>
<td>ICU</td>
<td>22 (17.3)</td>
<td>101 (27.9)</td>
<td>186 (22.0)</td>
<td>66 (9.4)</td>
<td>624 (15.5)</td>
<td>235 (21.7)</td>
<td>45 (10.3)</td>
<td>137 (15.8)</td>
<td>91 (10.6)</td>
</tr>
<tr>
<td>Length of stay, days, median (IQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>8 (3-18)</td>
<td>11 (5-24)</td>
<td>9 (5-20)</td>
<td>6 (3-14)</td>
<td>12 (6-22)</td>
<td>10 (6-18)</td>
<td>8 (4-17)</td>
<td>11 (5-25)</td>
<td>6 (2-10)</td>
</tr>
<tr>
<td>ICU</td>
<td>2 (1-5)</td>
<td>4 (2-9)</td>
<td>4 (2-7)</td>
<td>2 (1-4)</td>
<td>3 (1-7)</td>
<td>3 (2-7)</td>
<td>2 (1-5)</td>
<td>4 (2-7)</td>
<td>2 (1-4)</td>
</tr>
<tr>
<td>Blood transfusion, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On ICU admission</td>
<td>24 (18.5)</td>
<td>37 (10.0)</td>
<td>87 (9.7)</td>
<td>99 (14.1)</td>
<td>515 (12.6)</td>
<td>212 (19.4)</td>
<td>40 (9.1)</td>
<td>111 (12.4)</td>
<td>67 (7.1)</td>
</tr>
<tr>
<td>Overall</td>
<td>38 (29.2)</td>
<td>114 (30.9)</td>
<td>211 (23.4)</td>
<td>190 (27.1)</td>
<td>1105 (27.0)</td>
<td>381 (34.9)</td>
<td>92 (21.0)</td>
<td>239 (26.7)</td>
<td>141 (15.0)</td>
</tr>
</tbody>
</table>

Missing values: age, sex, and type of admission in 50, 114, and 479 patients, respectively; percentages are calculated taking into account missing values.

ICU: intensive care unit; SAPS: simplified acute physiology score; SOFA: sequential organ failure assessment; SD: standard deviation; IQ: interquartile range.
Figure S1. Hemoglobin concentrations over the first 2 weeks following admission to the ICU in patients who received a blood transfusion (right panel) and those who did not (left panel). The minimum (triangles) and maximum (circles) hemoglobin values recorded daily are displayed as means with 95% confidence interval (CI)
### Table S2. Severity scores on admission, mortality rates, length of stay and SOFA scores during the ICU stay according to the minimum hemoglobin concentration on admission and during the ICU stay.

<table>
<thead>
<tr>
<th>Hb categories, g/dl</th>
<th>n=9553*</th>
<th>Severity scores on ICU admission, mean ± SD</th>
<th>Mortality, n (%)</th>
<th>Length of stay, median (IQR)</th>
<th>SOFA score during ICU stay, mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SAPS II</td>
<td>SOFA-Score</td>
<td>ICU</td>
<td>Hospital</td>
</tr>
<tr>
<td>On admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 7</td>
<td>407</td>
<td>49.4 ± 20.0§</td>
<td>8.8 ± 4.9§</td>
<td>118 (30.3)§</td>
<td>146 (38.6)§</td>
</tr>
<tr>
<td>7-8.9</td>
<td>2055</td>
<td>44.1 ± 17.2</td>
<td>7.4 ± 4.3</td>
<td>354 (17.6)</td>
<td>498 (25.6)</td>
</tr>
<tr>
<td>9-10.9</td>
<td>2953</td>
<td>41.2 ± 16.9</td>
<td>6.6 ± 4.1</td>
<td>457 (15.8)</td>
<td>616 (22.0)</td>
</tr>
<tr>
<td>11-13</td>
<td>2333</td>
<td>39.8 ± 17.4</td>
<td>5.7 ± 4.0</td>
<td>311 (13.7)</td>
<td>414 (18.9)</td>
</tr>
<tr>
<td>&gt; 13</td>
<td>1588</td>
<td>37.4 ± 17.9</td>
<td>5.2 ± 4.1</td>
<td>225 (14.6)</td>
<td>282 (18.9)</td>
</tr>
<tr>
<td>During the ICU stay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 7</td>
<td>1169</td>
<td>48.0 ± 18.1§</td>
<td>8.6 ± 4.5§</td>
<td>316 (27.6)§</td>
<td>414 (37.3)§</td>
</tr>
<tr>
<td>7-8.9</td>
<td>2953</td>
<td>43.7 ± 16.7</td>
<td>7.3 ± 4.1</td>
<td>508 (17.2)</td>
<td>699 (24.8)</td>
</tr>
<tr>
<td>9-10.9</td>
<td>2443</td>
<td>40.5 ± 16.9</td>
<td>6.0 ± 3.9</td>
<td>308 (12.9)</td>
<td>415 (18.1)</td>
</tr>
<tr>
<td>11-13</td>
<td>1701</td>
<td>38.4 ± 17.9</td>
<td>5.3 ± 3.9</td>
<td>205 (12.4)</td>
<td>268 (16.8)</td>
</tr>
<tr>
<td>&gt; 13</td>
<td>1070</td>
<td>34.8 ± 17.6</td>
<td>4.5 ± 3.8</td>
<td>128 (12.3)</td>
<td>160 (16.0)</td>
</tr>
</tbody>
</table>

*missing Hb values: n=217.
§ p<0.001 among groups. Hb - hemoglobin; IQ - interquartile; ICU – intensive care unit; n – number of patients ; SAPS II - Simplified Acute Physiology Score II; SD - Standard- deviation; SOFA - Sequential Organ Failure Assessment
Figure S2. Relationship between the nadir hemoglobin concentration on the day of ICU admission, the sequential organ failure assessment (SOFA) score and ICU and hospital mortality.
Table S3. Blood transfusion according to the minimum hemoglobin concentration at any time during the ICU stay and mortality rates according to the transfusion status

<table>
<thead>
<tr>
<th>Hemoglobin concentration, g/dL*</th>
<th>&lt;7</th>
<th>7.1-8</th>
<th>8.1-9</th>
<th>9.1-10</th>
<th>10.1-13</th>
<th>&gt;13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>RBC transfusion, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICU</td>
<td>293</td>
<td>478</td>
<td>616</td>
<td>744</td>
<td>1010</td>
<td>626</td>
</tr>
<tr>
<td>(38)</td>
<td>(62)</td>
<td></td>
<td>(45.3)</td>
<td>(54.7)</td>
<td>(61.7)</td>
<td>(38.3)</td>
</tr>
<tr>
<td>Hospital</td>
<td>36.6</td>
<td>37.7</td>
<td>24.5</td>
<td>30.8</td>
<td>21.4</td>
<td>27.3</td>
</tr>
<tr>
<td>Mortality rate, %†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICU</td>
<td>28.1</td>
<td>27.0</td>
<td>18.4</td>
<td>21.2</td>
<td>15.1</td>
<td>20.0</td>
</tr>
<tr>
<td>Hospital</td>
<td>36.6</td>
<td>37.7</td>
<td>24.5</td>
<td>30.8</td>
<td>21.4</td>
<td>27.3</td>
</tr>
</tbody>
</table>

Missing values: Hemoglobin concentration (n=298), ICU mortality (n=218), hospital mortality (n=528).

* The minimum reported hemoglobin concentration during the ICU stay in patients who did not receive blood transfusions. In patients who received blood transfusions the mean transfusion trigger (minimum hemoglobin concentration on the day of transfusion) was considered.
† Valid percentage after exclusion of the missing values.
‡ p-value <0.05 vs. no transfusion.
**Table S4. Rate of transfusion according to ICU length of stay**

<table>
<thead>
<tr>
<th>ICU length of stay, days</th>
<th>N</th>
<th>Transfusion during the ICU stay, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1</td>
<td>2197</td>
<td>244 (11.1)</td>
</tr>
<tr>
<td>2</td>
<td>1734</td>
<td>302 (17.4)</td>
</tr>
<tr>
<td>3 - 4</td>
<td>2026</td>
<td>522 (25.8)</td>
</tr>
<tr>
<td>5 - 8</td>
<td>1665</td>
<td>511 (30.7)</td>
</tr>
<tr>
<td>&gt;9.00</td>
<td>1612</td>
<td>857 (53.2)</td>
</tr>
</tbody>
</table>
**Figure S3.** Hemoglobin concentration prior to blood transfusion on admission or at any time during the ICU stay according to SAPS II (upper panel) and SOFA (lower panel) scores.
Table S5. Mortality and morbidity according to transfusion status and the number of transfused red blood cell units

<table>
<thead>
<tr>
<th>Transfusion on day of ICU admission</th>
<th>n</th>
<th>SAPS II</th>
<th>SOFA</th>
<th>Mortality, n (%)</th>
<th>Length of stay, median (IQR)</th>
<th>SOFA score during ICU stay, mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ICU</td>
<td>Hospital</td>
<td>ICU</td>
</tr>
<tr>
<td>No</td>
<td>8361</td>
<td>40.7 ± 17.6</td>
<td>6.1 ± 4.1</td>
<td>1269 (15.6)</td>
<td>1676 (21.4)</td>
<td>3 (2-6)</td>
</tr>
<tr>
<td>Yes</td>
<td>1192</td>
<td>45.3 ± 18.3</td>
<td>8.1 ± 4.5</td>
<td>238 (20.3)</td>
<td>330 (29.2)</td>
<td>4 (2-7)</td>
</tr>
<tr>
<td>Transfusion during ICU stay</td>
<td></td>
<td></td>
<td></td>
<td>ICU</td>
<td>Hospital</td>
<td>ICU</td>
</tr>
<tr>
<td>No</td>
<td>7042</td>
<td>39.7 ± 17.7</td>
<td>5.7 ± 4.0</td>
<td>976 (14.3)</td>
<td>1286 (19.6)</td>
<td>3 (1-5)</td>
</tr>
<tr>
<td>Yes</td>
<td>2511</td>
<td>45.7 ± 17.1</td>
<td>8.1 ± 4.3</td>
<td>531 (21.5)</td>
<td>720 (30.0)</td>
<td>5 (3-12)</td>
</tr>
<tr>
<td>Number of transfused RBC units</td>
<td></td>
<td></td>
<td></td>
<td>ICU</td>
<td>Hospital</td>
<td>ICU</td>
</tr>
<tr>
<td>On admission to the ICU</td>
<td></td>
<td></td>
<td></td>
<td>ICU</td>
<td>Hospital</td>
<td>ICU</td>
</tr>
<tr>
<td>0</td>
<td>8361</td>
<td>40.7 ± 17.6§</td>
<td>6.1 ± 4.1§</td>
<td>1269 (15.6)§</td>
<td>1676 (21.4)§</td>
<td>3 (2-6)§</td>
</tr>
<tr>
<td>1</td>
<td>350</td>
<td>43.9 ± 17.1</td>
<td>7.5 ± 4.3</td>
<td>52 (15.1)</td>
<td>86 (25.5)</td>
<td>4 (2-7)</td>
</tr>
<tr>
<td>2</td>
<td>446</td>
<td>44.2 ± 18.2</td>
<td>7.8 ± 4.5</td>
<td>86 (19.5)</td>
<td>122 (29.0)</td>
<td>4 (2-7)</td>
</tr>
<tr>
<td>3</td>
<td>153</td>
<td>45.3 ± 18.1</td>
<td>8.1 ± 4.4</td>
<td>32 (21.6)</td>
<td>42 (29.0)</td>
<td>3 (2-6)</td>
</tr>
<tr>
<td>4</td>
<td>113</td>
<td>48.6 ± 19.0</td>
<td>8.8 ± 4.5</td>
<td>27 (24.3)</td>
<td>35 (32.7)</td>
<td>4 (2-6)</td>
</tr>
<tr>
<td>≥5</td>
<td>130</td>
<td>49.5 ± 20.3</td>
<td>10.1 ± 5.1</td>
<td>41 (32.3)</td>
<td>45 (36.6)</td>
<td>3 (1-7)</td>
</tr>
<tr>
<td>At any time during ICU stay</td>
<td></td>
<td></td>
<td></td>
<td>ICU</td>
<td>Hospital</td>
<td>ICU</td>
</tr>
<tr>
<td>0</td>
<td>7042</td>
<td>39.7 ± 17.7§</td>
<td>5.7 ± 4.0§</td>
<td>976 (14.3)§</td>
<td>1286 (19.6)§</td>
<td>3 (1-5)§</td>
</tr>
<tr>
<td>1</td>
<td>499</td>
<td>43.0 ± 15.3</td>
<td>7.0 ± 3.9</td>
<td>70 (14.2)</td>
<td>103 (21.4)</td>
<td>4 (2-8)</td>
</tr>
<tr>
<td>2</td>
<td>724</td>
<td>44.7 ± 17.1</td>
<td>7.7 ± 4.2</td>
<td>135 (19.1)</td>
<td>193 (28.2)</td>
<td>5 (2-10)</td>
</tr>
<tr>
<td>3</td>
<td>307</td>
<td>45.9 ± 16.8</td>
<td>8.0 ± 4.0</td>
<td>65 (21.5)</td>
<td>85 (28.7)</td>
<td>5 (2-9)</td>
</tr>
<tr>
<td>4</td>
<td>287</td>
<td>47.0 ± 18.1</td>
<td>8.4 ± 4.0</td>
<td>58 (20.6)</td>
<td>80 (29.1)</td>
<td>5 (3-12)</td>
</tr>
<tr>
<td>≥5</td>
<td>694</td>
<td>47.9 ± 17.8</td>
<td>9.2 ± 4.6</td>
<td>203 (29.7)</td>
<td>259 (38.8)</td>
<td>10 (4-20)</td>
</tr>
</tbody>
</table>
RBC - red blood cell; IQR – Interquartile; ICU – intensive care unit; n – number of patients; SAPS II - Simplified Acute Physiology Score II; SD - standard deviation; SOFA - Sequential Organ Failure Assessment

§ p <0.001 among groups
Table S6. Summary of univariate and multivariable analyses with hospital mortality as the dependent variable

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Univariate analysis</th>
<th></th>
<th>Multivariable analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hazard ratio (95% CI)</td>
<td>p-value</td>
<td>Hazard ratio (95% CI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p-value</td>
</tr>
<tr>
<td>Age (per year)</td>
<td>1.02 [1.02-1.02]</td>
<td>&lt;0.001</td>
<td>1.01 [1.00-1.01]</td>
</tr>
<tr>
<td>Male</td>
<td>0.94 [0.86-1.02]</td>
<td>0.148</td>
<td>0.97 [0.88-1.08]</td>
</tr>
<tr>
<td>SAPS II (per point)</td>
<td>1.06 [1.06-1.06]</td>
<td>&lt;0.001</td>
<td>1.04 [1.04-1.05]</td>
</tr>
<tr>
<td>SOFA scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOFAresp</td>
<td>1.47 [1.42-1.53]</td>
<td>&lt;0.001</td>
<td>1.11 [1.06-1.17]</td>
</tr>
<tr>
<td>SOFACoag</td>
<td>1.24 [1.19-1.29]</td>
<td>&lt;0.001</td>
<td>1.10 [1.05-1.16]</td>
</tr>
<tr>
<td>SOFAhep</td>
<td>1.15 [1.11-1.18]</td>
<td>&lt;0.001</td>
<td>1.02 [0.98-1.07]</td>
</tr>
<tr>
<td>SOFAcns</td>
<td>1.52 [1.48-1.56]</td>
<td>&lt;0.001</td>
<td>1.07 [1.03-1.12]</td>
</tr>
<tr>
<td>SOFARen</td>
<td>2.45 [2.24-2.69]</td>
<td>&lt;0.001</td>
<td>1.14 [1.10-1.19]</td>
</tr>
<tr>
<td>SOFACvs</td>
<td>1.39 [1.35-1.43]</td>
<td>&lt;0.001</td>
<td>1.06 [1.02-1.10]</td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPD</td>
<td>1.23 [1.09-1.40]</td>
<td>&lt;0.001</td>
<td>0.90 [0.78-1.04]</td>
</tr>
<tr>
<td>Cancer. non-metastatic</td>
<td>1.27 [1.11-1.45]</td>
<td>&lt;0.001</td>
<td>1.43 [1.22-1.68]</td>
</tr>
<tr>
<td>Cancer. metastatic</td>
<td>1.73 [1.42-2.10]</td>
<td>&lt;0.001</td>
<td>1.39 [1.08-1.78]</td>
</tr>
<tr>
<td>Hematologic cancer</td>
<td>2.54 [2.06-3.12]</td>
<td>0.326</td>
<td>0.99 [0.75-1.29]</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1.07 [0.93-1.24]</td>
<td>&lt;0.001</td>
<td>1.03 [0.87-1.21]</td>
</tr>
<tr>
<td>Heart failure (NYHA III-IV)</td>
<td>1.91 [1.69-2.16]</td>
<td>&lt;0.001</td>
<td>1.16 [1.00-1.34]</td>
</tr>
<tr>
<td>Renal failure</td>
<td>1.60 [1.40-1.82]</td>
<td>&lt;0.001</td>
<td>0.97 [0.82-1.13]</td>
</tr>
<tr>
<td>HIV</td>
<td>1.98 [1.33-2.94]</td>
<td>&lt;0.001</td>
<td>0.86 [0.56-1.32]</td>
</tr>
<tr>
<td>Cirrhosis</td>
<td>2.15 [1.79-2.57]</td>
<td>&lt;0.001</td>
<td>1.48 [1.19-1.83]</td>
</tr>
<tr>
<td>Immunosuppression</td>
<td>1.57 [1.36-1.80]</td>
<td>&lt;0.001</td>
<td>1.09 [0.92-1.30]</td>
</tr>
<tr>
<td>MV on ICU admission</td>
<td>2.65 [2.41-2.92]</td>
<td>&lt;0.001</td>
<td>1.29 [1.12-1.48]</td>
</tr>
<tr>
<td>RRT on ICU admission</td>
<td>2.12 [1.83-2.45]</td>
<td>&lt;0.001</td>
<td>0.67 [0.55-0.82]</td>
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<tr>
<td>Sepsis on ICU admission</td>
<td>2.17 [1.98-2.39]</td>
<td>&lt;0.001</td>
<td>1.03 [0.92-1.16]</td>
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<tr>
<td>Hemoglobin concentration on admission, g/dl</td>
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<td></td>
<td></td>
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<tr>
<td>&lt;7</td>
<td>R</td>
<td>NA</td>
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<tr>
<td>Type of admission</td>
<td>7-9</td>
<td>9-11</td>
<td>11-13</td>
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</tr>
<tr>
<td></td>
<td>0.57</td>
<td>0.48</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>[0.48-0.69]</td>
<td>[0.40-0.58]</td>
<td>[0.35-0.50]</td>
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<tr>
<td></td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
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<tr>
<td></td>
<td>0.82</td>
<td>0.75</td>
<td>0.76</td>
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<tr>
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<td>[0.66-1.01]</td>
<td>[0.61-0.93]</td>
<td>[0.61-0.95]</td>
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<tr>
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<td>0.063</td>
<td>0.009</td>
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**Type of admission**

<table>
<thead>
<tr>
<th>Type of admission</th>
<th>Surgical</th>
<th>Medical</th>
<th>Trauma</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>R</td>
<td>1.83</td>
<td>1.04</td>
<td>2.14</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>[1.65-2.02]</td>
<td>[0.84-1.30]</td>
<td>[1.32-3.47]</td>
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<tr>
<td></td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.702</td>
<td>0.002</td>
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<tr>
<td></td>
<td>1.59</td>
<td>1.86</td>
<td>[1.42-2.42]</td>
<td>2.71</td>
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<tr>
<td></td>
<td>[1.40-1.80]</td>
<td>[1.40-1.80]</td>
<td>[1.42-2.42]</td>
<td>[1.62-4.51]</td>
</tr>
<tr>
<td></td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
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</table>

**Type of admission**

<table>
<thead>
<tr>
<th>Type of admission</th>
<th>RBC transfusion†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>[1.02-1.05]</td>
</tr>
<tr>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>[0.96-1.00]</td>
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<tr>
<td></td>
<td>0.048</td>
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</tbody>
</table>

* Cox proportional hazard analysis with in-hospital death as the dependent variable in the whole population adjusted for geographic region, hospital and ICU organizational characteristics (type of hospital, hospital bed capacity, nurse to patient ratio and the presence of an ICU specialist 24 h/day)
† introduced as a time-dependent variable in relation to the time to the first RBC unit transfused.

SOFA: sequential organ failure assessment; COPD: chronic obstructive pulmonary disease; RRT: renal replacement therapy; RBC: red blood cell; MV: mechanical ventilation