Age, years $70 \pm 9$ $73 \pm 9$ $0.1298$ Male sex, n (%)76 (65%)17 (57%) $0.3689$ Body-mass index, kg/m² $29 \pm 7$ $27 \pm 7$ $0.1239$ Obesity, n (%)43 (38%)7 (25%) $0.2067$ SAPS II at admission, points $57 \pm 18$ $60 \pm 17$ $0.4278$ Underlying chronic cardiac disease, n (%) $50$ (43) $15$ (50) $0.4981$ Underlying chronic lung disease, n (%) $47$ (41) $10$ (33) $0.4722$ Acute respiratory failure as reason for intubation, No. (%) $74$ (64) $15$ (50) $0.1675$ Characteristics of the patients the day of extubation $50$ (43) $16$ (49) $0.9421$ Duration of mechanical ventilation, median (IQR), days $6$ [3-11] $6$ [4-9] $0.9421$ Weaning difficulty, No. (%) $0.2035$ $0.1675$ $0.1675$ Difficult or prolonged weaning $50$ (43%) $11$ (37%) $0.2035$ Difficult or prolonged weaning $50$ (43%) $11$ (37%) $0.4211$ Administration of steroids before extubation, n (%) $34$ (13%) $12$ (40%) $0.3474$ Abundant secretions, n / n total (%) $47$ (43%) $15$ (50%) $0.4772$ Administration of steroids before extubation, n (%) $52$ (45%) $11$ (37%) $0.4211$ Characteristics at time of ARF $11675$ $211$ [5-47] $0.9710$ Systolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min <t< th=""><th></th><th>Discharged alive from ICU (n=116)</th><th>Died in the ICU (n=30)</th><th>P value</th></t<>		Discharged alive from ICU (n=116)	Died in the ICU (n=30)	P value
Nale sex, n (%)       76 (65%)       17 (57%)       0.3689         Bady-mass index, kg/m <sup>2</sup> $29 \pm 7$ $27 \pm 7$ 0.1239         Obesity, n (%)       43 (38%)       7 (25%)       0.2067         SAPS II at admission, points $57 \pm 18$ 60 ± 17       0.4278         Underlying chronic cardiac disease, n (%)       50 (43)       15 (50)       0.4981         Underlying chronic lung disease, n (%)       47 (41)       10 (33)       0.4722         Acute respiratory failure as reason for intubation, No. (%)       74 (64)       15 (50)       0.1675         Characteristics of the patients the day of extubation       50 (43)       16 (4-9)       0.9421         Duration of mechanical ventilation, median (IQR), days       6 [3-11]       6 [4-9]       0.9421         Weaning difficulty, No. (%)       0.2035       Simple weaning       66 (57%)       19 (63%)         Difficult or prolonged weaning       50 (43%)       11 (37%)       0.4211         Abundant secretions, n / n total (%)       47 (43%)       15 (50%)       0.4772         Administration of steroids before extubation, n (%)       52 (45%)       11 (37%)       0.4211         Characteristics at time of ARF       11 (37%)       0.4211       0.5124       0.2207         Dis	Characteristics of the patients at admission			
Body-mass index, kg/m <sup>2</sup> $29 \pm 7$ $27 \pm 7$ $0.1239$ Obesity, n (%)         43 (38%)         7 (25%) $0.2067$ SAP5 II at admission, points $57 \pm 18$ $60 \pm 17$ $0.4278$ Underlying chronic cardiac disease, n (%) $50$ (43) $15$ (50) $0.4981$ Underlying chronic lung disease, n (%) $47$ (41) $10$ (33) $0.4722$ Acute respiratory failure as reason for intubation, No. (%) $74$ (64) $15$ (50) $0.1675$ Characteristics of the patients the day of extubation         SOFA score, points $4.3 \pm 2.8$ $5.0 \pm 2.7$ $0.2191$ Duration of mechanical ventilation, median (IQR), days $6$ [3-11] $6$ [4-9] $0.9421$ Weaning difficulty, No. (%) $0.2035$ Simple weaning $66$ (57%) $19$ (63%)           Difficult or prolonged weaning $50$ (43%) $11$ (37%) $0.4272$ Abundant secretions, n / n total (%) $47$ (43%) $15$ (50%) $0.4772$ Administration of steroids before extubation, n (%) $52$ (45%) $11$ (37%) $0.4211$ Characteristics at time of ARF         Interval between extubation and respira	Age, years	70 ± 9	73 ± 9	0.1298
Obesity, n (%)         43 (38%)         7 (25%)         0.2067           SAPS II at admission, points $57 \pm 18$ $60 \pm 17$ 0.4278           Underlying chronic cardiac disease, n (%) $50$ (43) $15$ (50)         0.4981           Underlying chronic lung disease, n (%) $47$ (41) $10$ (33)         0.4722           Acute respiratory failure as reason for intubation, No. (%) $74$ (64) $15$ (50)         0.2191           Duration of mechanical ventilation, median (IQR), days $6$ [3-11] $6$ [4-9]         0.9421           Weaning difficulty, No. (%)         0.2035         Simple weaning $66$ (57%) $19$ (63%)           Difficult or prolonged weaning $50$ (43%) $11$ (37%)         0.2047           Abundant secretions, n / n total (%) $34$ (31%) $12$ (40%)         0.3474           Abundant secretions, n / n total (%) $47$ (43%) $15$ (50%)         0.4772           Administration of steroids before extubation, n (%) $52$ (45%) $11$ (37%)         0.4211           Characteristics at time of ARF $21$ [4-55] $21$ [5-47]         0.9710           Systolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ 0.0063	Male sex, n (%)	76 (65%)	17 (57%)	0.3689
SAPS II at admission, points $57 \pm 18$ $60 \pm 17$ $0.4278$ Underlying chronic cardiac disease, n (%) $50 (43)$ $15 (50)$ $0.4981$ Underlying chronic lung disease, n (%) $47 (41)$ $10 (33)$ $0.4722$ Acute respiratory failure as reason for intubation, No. (%) $74 (64)$ $15 (50)$ $0.1675$ <b>Characteristics of the patients the day of extubation</b> $50 (43)$ $16 [4-9]$ $0.9421$ Weaning difficulty, No. (%) $4,3 \pm 2,8$ $5,0 \pm 2,7$ $0.2191$ Duration of mechanical ventilation, median (IQR), days $6 [3-11]$ $6 [4-9]$ $0.9421$ Weaning difficulty, No. (%) $0.2035$ $0.2035$ $0.2035$ Simple weaning $66 (57\%)$ $19 (63\%)$ $0.2035$ Difficult or prolonged weaning $50 (43\%)$ $11 (37\%)$ $0.3474$ Abundant secretions, n / n total (%) $47 (43\%)$ $15 (50\%)$ $0.4772$ Administration of steroids before extubation, n (%) $52 (45\%)$ $11 (37\%)$ $0.4211$ Characteristics at time of ARF $0.2037$ $0.9710$ Systolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats	Body-mass index, kg/m <sup>2</sup>	29 ± 7	27 ± 7	0.1239
Underlying chronic cardiac disease, n (%)         50 (43)         15 (50)         0.4981           Underlying chronic lung disease, n (%)         47 (41)         10 (33)         0.4722           Acute respiratory failure as reason for intubation, No. (%)         74 (64)         15 (50)         0.1675 <b>Characteristics of the patients the day of extubation</b> 50FA score, points         4,3 ± 2,8         5,0 ± 2,7         0.2191           Duration of mechanical ventilation, median (IQR), days         6 [3-11]         6 [4-9]         0.9421           Weaning difficulty, No. (%)         0.2035         5         0.1675           Difficult or prolonged weaning         50 (43%)         11 (37%)         11           Ineffective cough, n / n total (%)         34 (31%)         12 (40%)         0.3474           Abundant secretions, n / n total (%)         47 (43%)         15 (50%)         0.4772           Administration of steroids before extubation, n (%)         52 (45%)         11 (37%)         0.4211           Characteristics at time of ARF         10         13 (11%)         4 (13%)         0.7462           Prophylactic non-invasive ventilation after extubation, n (%)         52 (45%)         11 (37%)         0.4211           Characteristics at time of ARF         11         13 ± 24         0.2207	Obesity, n (%)	43 (38%)	7 (25%)	0.2067
Underlying chronic lung disease, n (%)47 (41)10 (33)0.4722Acute respiratory failure as reason for intubation, No. (%)74 (64)15 (50)0.1675Characteristics of the patients the day of extubation50FA score, points $4,3 \pm 2,8$ $5,0 \pm 2,7$ 0.2191Duration of mechanical ventilation, median (IQR), days6 [3-11]6 [4-9]0.9421Weaning difficulty, No. (%)0.2035Simple weaning66 (57%)19 (63%)Difficult or prolonged weaning50 (43%)11 (37%)Ineffective cough, n / n total (%)34 (31%)12 (40%)0.3474Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARF10137 $\pm 24$ 130 $\pm 24$ 0.2007Diastolic arterial pressure, mm Hg137 $\pm 24$ 130 $\pm 24$ 0.2207Diastolic arterial pressure, mm Hg68 $\pm 14$ 60 $\pm 15$ 0.0063Heart rate, beats/min88 $\pm 24$ 34 $\pm 22$ 0.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121Sp02, %95 $\pm 5$ 93 $\pm 5$ 0.1086PaO2, mm Hg188 $\pm 76$ 171 $\pm 68$ 0.3921Ph_units7,43 $\pm 0,09$ 7,41 $\pm 0,09$ 0.2626	SAPS II at admission, points	57 ± 18	60 ± 17	0.4278
Acute respiratory failure as reason for intubation, No. (%)74 (64)15 (50)0.1675Characteristics of the patients the day of extubationSOFA score, points $4,3 \pm 2,8$ $5,0 \pm 2,7$ 0.2191Duration of mechanical ventilation, median (IQR), days $6$ [3-11] $6$ [4-9]0.9421Weaning difficulty, No. (%)0.2035Simple weaning $66$ (57%)19 (63%)Difficult or prolonged weaning $50$ (43%)11 (37%)Ineffective cough, n / n total (%)34 (31%)12 (40%)0.3474Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARF </td <td>Underlying chronic cardiac disease, n (%)</td> <td>50 (43)</td> <td>15 (50)</td> <td>0.4981</td>	Underlying chronic cardiac disease, n (%)	50 (43)	15 (50)	0.4981
Characteristics of the patients the day of extubation           SOFA score, points $4,3 \pm 2,8$ $5,0 \pm 2,7$ $0.2191$ Duration of mechanical ventilation, median (IQR), days $6$ [ $3-11$ ] $6$ [ $4-9$ ] $0.9421$ Weaning difficulty, No. (%) $0.2035$ $0.2035$ $0.2035$ Simple weaning $66$ ( $57\%$ ) $19$ ( $63\%$ ) $0.2035$ Difficult or prolonged weaning $50$ ( $43\%$ ) $11$ ( $37\%$ ) $0.2035$ Ineffective cough, n / n total (%) $34$ ( $31\%$ ) $12$ ( $40\%$ ) $0.3474$ Abundant secretions, n / n total (%) $47$ ( $43\%$ ) $15$ ( $50\%$ ) $0.4772$ Administration of steroids before extubation, n (%) $13$ ( $11\%$ ) $4$ ( $13\%$ ) $0.7462$ Prophylactic non-invasive ventilation after extubation, n (%) $52$ ( $45\%$ ) $11$ ( $37\%$ ) $0.4211$ <b>Characteristics at time of ARF</b> $11$ $137\%$ $0.4211$ Interval between extubation and respiratory failure, hours $21$ [ $4-55$ ] $21$ [ $5-47$ ] $0.9710$ Systolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min	Underlying chronic lung disease, n (%)	47 (41)	10 (33)	0.4722
SOFA score, points $4,3 \pm 2,8$ $5,0 \pm 2,7$ $0.2191$ Duration of mechanical ventilation, median (IQR), days $6$ [ $3-11$ ] $6$ [ $4-9$ ] $0.9421$ Weaning difficulty, No. (%) $0.2035$ Simple weaning $66$ ( $57\%$ ) $19$ ( $63\%$ )Difficult or prolonged weaning $50$ ( $43\%$ ) $11$ ( $37\%$ )Ineffective cough, n / n total (%) $34$ ( $31\%$ ) $12$ ( $40\%$ ) $0.3474$ Abundant secretions, n / n total (%) $47$ ( $43\%$ ) $15$ ( $50\%$ ) $0.4772$ Administration of steroids before extubation, n (%) $13$ ( $11\%$ ) $4$ ( $13\%$ ) $0.7462$ Prophylactic non-invasive ventilation after extubation, n (%) $52$ ( $45\%$ ) $11$ ( $37\%$ ) $0.4211$ Characteristics at time of ARF $11$ $137 \pm 24$ $130 \pm 24$ $0.2207$ Diastolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48$ ( $41\%$ ) $5$ ( $17\%$ ) $0.0121$ Sp0 <sub>2</sub> , % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0.09$ $7,41 \pm 0.09$ $0.2626$	Acute respiratory failure as reason for intubation, No. (%)	74 (64)	15 (50)	0.1675
Duration of mechanical ventilation, median (IQR), days6 [3-11]6 [4-9]0.9421Weaning difficulty, No. (%)0.2035Simple weaning66 (57%)19 (63%)Difficult or prolonged weaning50 (43%)11 (37%)Ineffective cough, n / n total (%)34 (31%)12 (40%)0.3474Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg68 ± 1460 ± 150.0063Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121SpO <sub>2</sub> , %95 ± 593 ± 50.1086PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Characteristics of the patients the day of extubation			
Weaning difficulty, No. (%) $0.2035$ Simple weaning $66 (57\%)$ $19 (63\%)$ Difficult or prolonged weaning $50 (43\%)$ $11 (37\%)$ Ineffective cough, n / n total (%) $34 (31\%)$ $12 (40\%)$ $0.3474$ Abundant secretions, n / n total (%) $47 (43\%)$ $15 (50\%)$ $0.4772$ Administration of steroids before extubation, n (%) $13 (11\%)$ $4 (13\%)$ $0.7462$ Prophylactic non-invasive ventilation after extubation, n (%) $52 (45\%)$ $11 (37\%)$ $0.4211$ Characteristics at time of ARFInterval between extubation and respiratory failure, hours $21 [4-55]$ $21 [5-47]$ $0.9710$ Systolic arterial pressure, mm Hg $137 \pm 24$ $130 \pm 24$ $0.2207$ Diastolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO <sub>2</sub> , $\%$ $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0.09$ $7,41 \pm 0.09$ $0.2626$	SOFA score, points	4,3 ± 2,8	5,0 ± 2,7	0.2191
Simple weaning66 (57%)19 (63%)Difficult or prolonged weaning50 (43%)11 (37%)Ineffective cough, n / n total (%)34 (31%)12 (40%)0.3474Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg137 ± 24130 ± 240.2207Diastolic arterial pressure, mm Hg68 ± 1460 ± 150.0063Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121SpO <sub>2</sub> , %95 ± 593 ± 50.1086PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Duration of mechanical ventilation, median (IQR), days	6 [3-11]	6 [4-9]	0.9421
Difficult or prolonged weaning50 (43%)11 (37%)Ineffective cough, n / n total (%)34 (31%)12 (40%)0.3474Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg68 ± 1460 ± 150.0063Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121SpO2, %95 ± 593 ± 50.1086PaO2, mm Hg82 ± 3379 ± 200.7228PaO2/FiO2, mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Weaning difficulty, No. (%)			0.2035
Ineffective cough, n / n total (%) $34 (31\%)$ $12 (40\%)$ $0.3474$ Abundant secretions, n / n total (%) $47 (43\%)$ $15 (50\%)$ $0.4772$ Administration of steroids before extubation, n (%) $13 (11\%)$ $4 (13\%)$ $0.7462$ Prophylactic non-invasive ventilation after extubation, n (%) $52 (45\%)$ $11 (37\%)$ $0.4211$ Characteristics at time of ARFInterval between extubation and respiratory failure, hours $21 [4-55]$ $21 [5-47]$ $0.9710$ Systolic arterial pressure, mm Hg $137 \pm 24$ $130 \pm 24$ $0.2207$ Diastolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO <sub>2</sub> , % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Simple weaning	66 (57%)	19 (63%)	
Abundant secretions, n / n total (%)47 (43%)15 (50%)0.4772Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg68 ± 1460 ± 150.0063Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121SpO2, %95 ± 593 ± 50.1086PaO2, mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Difficult or prolonged weaning	50 (43%)	11 (37%)	
Administration of steroids before extubation, n (%)13 (11%)4 (13%)0.7462Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg137 ± 24130 ± 240.2207Diastolic arterial pressure, mm Hg68 ± 1460 ± 150.0063Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%)0.0121SpO2, %95 ± 593 ± 50.1086PaO2, mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Ineffective cough, n / n total (%)	34 (31%)	12 (40%)	0.3474
Prophylactic non-invasive ventilation after extubation, n (%)52 (45%)11 (37%)0.4211Characteristics at time of ARFInterval between extubation and respiratory failure, hours $21 [4-55]$ $21 [5-47]$ $0.9710$ Systolic arterial pressure, mm Hg $137 \pm 24$ $130 \pm 24$ $0.2207$ Diastolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO <sub>2</sub> , % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> , mm Hg $82 \pm 33$ $79 \pm 20$ $0.7228$ PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Abundant secretions, n / n total (%)	47 (43%)	15 (50%)	0.4772
Characteristics at time of ARF         Interval between extubation and respiratory failure, hours       21 [4-55]       21 [5-47]       0.9710         Systolic arterial pressure, mm Hg       137 ± 24       130 ± 24       0.2207         Diastolic arterial pressure, mm Hg       68 ± 14       60 ± 15       0.0063         Heart rate, beats/min       87 ± 33       92 ± 29       0.4382         Respiratory rate, breaths/min       38 ± 24       34 ± 22       0.5124         Clinical signs suggesting respiratory distress, n (%)       48 (41%)       5 (17%)       0.0121         SpO <sub>2</sub> , %       95 ± 5       93 ± 5       0.1086         PaO <sub>2</sub> , mm Hg       82 ± 33       79 ± 20       0.7228         PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg       188 ± 76       171 ± 68       0.3921         pH, units       7,43 ± 0,09       7,41 ± 0,09       0.2626	Administration of steroids before extubation, n (%)	13 (11%)	4 (13%)	0.7462
Interval between extubation and respiratory failure, hours21 [4-55]21 [5-47]0.9710Systolic arterial pressure, mm Hg137 ± 24130 ± 240.2207Diastolic arterial pressure, mm Hg68 ± 1460 ± 15 <b>0.0063</b> Heart rate, beats/min87 ± 3392 ± 290.4382Respiratory rate, breaths/min38 ± 2434 ± 220.5124Clinical signs suggesting respiratory distress, n (%)48 (41%)5 (17%) <b>0.0121</b> SpO2, %95 ± 593 ± 50.1086PaO2, 7EiO2, mm Hg188 ± 76171 ± 680.3921pH, units7,43 ± 0,097,41 ± 0,090.2626	Prophylactic non-invasive ventilation after extubation, n (%)	52 (45%)	11 (37%)	0.4211
Systolic arterial pressure, mm Hg       137 ± 24       130 ± 24       0.2207         Diastolic arterial pressure, mm Hg       68 ± 14       60 ± 15       0.0063         Heart rate, beats/min       87 ± 33       92 ± 29       0.4382         Respiratory rate, breaths/min       38 ± 24       34 ± 22       0.5124         Clinical signs suggesting respiratory distress, n (%)       48 (41%)       5 (17%)       0.0121         SpO2, %       95 ± 5       93 ± 5       0.1086         PaO2, Mm Hg       82 ± 33       79 ± 20       0.7228         PaO2/FiO2, mm Hg       188 ± 76       171 ± 68       0.3921         pH, units       7,43 ± 0,09       7,41 ± 0,09       0.2626	Characteristics at time of ARF			
Diastolic arterial pressure, mm Hg $68 \pm 14$ $60 \pm 15$ $0.0063$ Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO <sub>2</sub> , % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> , mm Hg $82 \pm 33$ $79 \pm 20$ $0.7228$ PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Interval between extubation and respiratory failure, hours	21 [4-55]	21 [5-47]	0.9710
Heart rate, beats/min $87 \pm 33$ $92 \pm 29$ $0.4382$ Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO <sub>2</sub> , % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO <sub>2</sub> , mm Hg $82 \pm 33$ $79 \pm 20$ $0.7228$ PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Systolic arterial pressure, mm Hg	137 ± 24	130 ± 24	0.2207
Respiratory rate, breaths/min $38 \pm 24$ $34 \pm 22$ $0.5124$ Clinical signs suggesting respiratory distress, n (%) $48 (41\%)$ $5 (17\%)$ $0.0121$ SpO2, % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO2, mm Hg $82 \pm 33$ $79 \pm 20$ $0.7228$ PaO2/FiO2, mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Diastolic arterial pressure, mm Hg	68 ± 14	60 ± 15	0.0063
Clinical signs suggesting respiratory distress, n (%)       48 (41%)       5 (17%)       0.0121         SpO2, %       95 ± 5       93 ± 5       0.1086         PaO2, mm Hg       82 ± 33       79 ± 20       0.7228         PaO2/FiO2, mm Hg       188 ± 76       171 ± 68       0.3921         pH, units       7,43 ± 0,09       7,41 ± 0,09       0.2626	Heart rate, beats/min	87 ± 33	92 ± 29	0.4382
SpO2, % $95 \pm 5$ $93 \pm 5$ $0.1086$ PaO2, mm Hg $82 \pm 33$ $79 \pm 20$ $0.7228$ PaO2/FiO2, mm Hg $188 \pm 76$ $171 \pm 68$ $0.3921$ pH, units $7,43 \pm 0,09$ $7,41 \pm 0,09$ $0.2626$	Respiratory rate, breaths/min	38 ± 24	34 ± 22	0.5124
PaO2, mm Hg         82 ± 33         79 ± 20         0.7228           PaO2/FiO2, mm Hg         188 ± 76         171 ± 68         0.3921           pH, units         7,43 ± 0,09         7,41 ± 0,09         0.2626	Clinical signs suggesting respiratory distress, n (%)	48 (41%)	5 (17%)	0.0121
PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg         188 ± 76         171 ± 68         0.3921           pH, units         7,43 ± 0,09         7,41 ± 0,09         0.2626	SpO <sub>2</sub> , %	95 ± 5	93 ± 5	0.1086
pH, units 7,43 ± 0,09 7,41 ± 0,09 0.2626	PaO <sub>2</sub> , mm Hg	82 ± 33	79 ± 20	0.7228
	PaO <sub>2</sub> /FiO <sub>2</sub> , mm Hg	188 ± 76	171 ± 68	0.3921
PaCO <sub>2</sub> , mm Hg 45 ± 14 46 ± 16 0.8860	pH, units	7,43 ± 0,09	7,41 ± 0,09	0.2626
	PaCO <sub>2</sub> , mm Hg	45 ± 14	46 ± 16	0.8860

Additional Table (Additional file 2): Comparison between patients who were discharged alive from ICU and those who died in ICUs after post-extubation respiratory failure.

Hypercapnia (PaCO <sub>2</sub> > 45 mm Hg), n / n total (%)	38/99 (38%)	8/24 (33%)	0.6464
Treatment of ARF			
Use of non-invasive ventilation as rescue therapy, n (%)	68 (59%)	16 (53%)	0.6015
Duration of NIV, hours	16 [2-46]	4 [1-10]	0.0614
Duration of high-flow nasal oxygen, hours	3 [0-18]	2 [0-9]	0.3376
Duration of treatment between the onset of respiratory failure and recovery or reintubation, hours	27 [5-67]	7 [2-19]	0.0069
Reintubation at any time in the ICU, n (%)	52 (45%)	23 (77%)	0.0019

**Abbreviations:** NIV = Non-invasive ventilation; SAPS = Simplified Acute Physiology Score.

Values are given as mean ± standard deviation or median [interquartile range, 25<sup>th</sup>- 75<sup>th</sup> percentiles] # Weaning difficulty was defined as following: simple weaning included patients extubated after success of the initial spontaneous breathing trial, difficult weaning included patients who failed the initial spontaneous breathing trial and were extubated within the 7 following days, and prolonged weaning included patients extubated more than 7 days after the initial spontaneous breathing trial.