

Comparison of Mechanical Power during Adaptive Support Ventilation versus Non-automated Pressure-controlled Ventilation – a pilot study

Laura A. Buite-man-Kruizinga¹, Hassan E. Mkadmi²,
Marcus J. Schultz^{3,4,5,6}, Peter L. Tangkau¹, Pim L.J. van der Heiden¹

Reinier de Graaf Hospital, Delft, the Netherlands

¹Department of Intensive Care

²Department of Research

Academic Medical Center, Amsterdam, the Netherlands:

³Department of Intensive Care

⁴Laboratory of Experimental Intensive Care and Anesthesiology (L-E-I-C-A)

Mahidol University, Bangkok, Thailand:

⁵Mahidol-Oxford Tropical Medicine Research Unit (MORU)

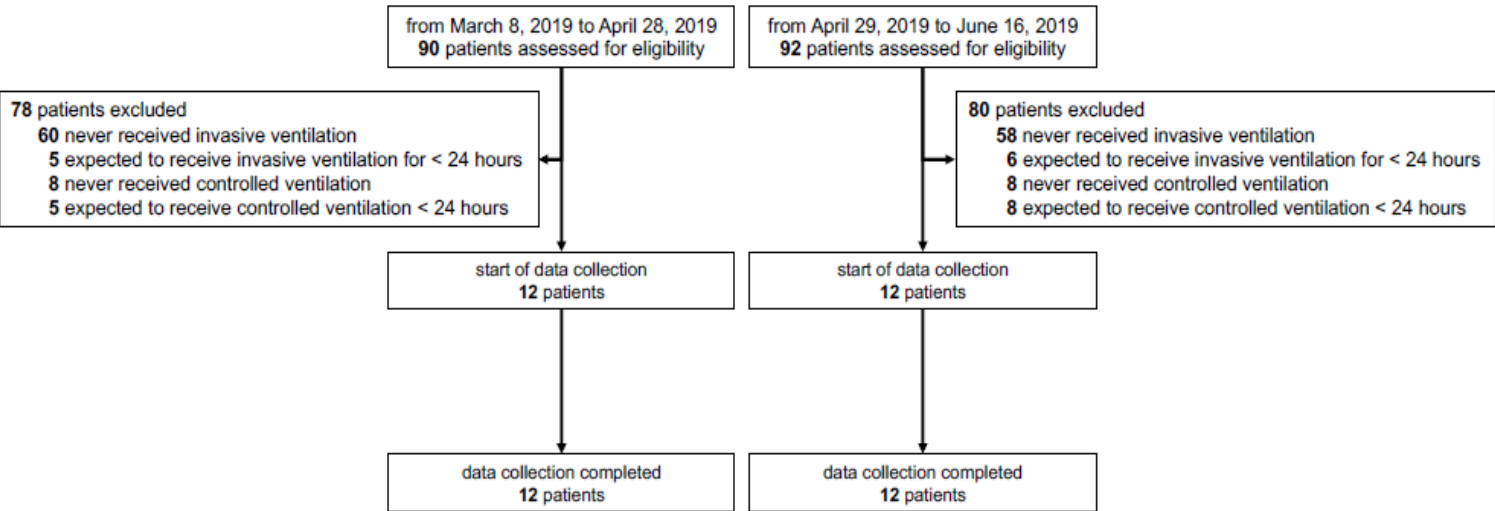
University of Oxford, Oxford, UK:

⁶Nuffield Department of Medicine

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CONSORT diagram

Flow of patients before and after unit-wide implementation of ASV



eTable 1 – Ventilation data per subgroup, per day and time point**Conventional**

N=12

	Day 1		
	Time point 1	Time point 2	Time point 3
MP (J/min)	20.2 (13-38.4)	22.2 (10.2-41.4)	23.6 (10.9-40.8)
Tidal volume (ml)	451 (384-648)	440 (363-577)	492 (345-648)
PEEP (cmH ₂ O)	9 (5-16)	9 (6-15)	10 (6-16)
Ppeak (cmH ₂ O)	26 (20-35)	29 (18-34)	28 (19-35)
Pplat (cmH ₂ O)	20(15-27)	19(14-28)	20(14-28)
ΔP (cmH ₂ O)	9 (5-19)	9 (4-20)	6 (3-20)
RR (bpm)	20 (15-28)	20 (18-28)	20 (18-29)
FiO ₂ (%)	55 (25-100)	48 (30-80)	48 (30-70)

	Day 2		
	Time point 1	Time point 2	Time point 3
MP (J/min)	25.2 (9.9-52.3)	26.9 (12.6-48.8)	21.4 (11.7-40.2)
Tidal volume (ml)	439 (355-579)	472 (288-565)	431 (365-623)
PEEP (cmH ₂ O)	10 (6-16)	9 (6-17)	8 (3-16)
Ppeak (cmH ₂ O)	31 (19-40)	34 (20-42)	29 (21-40)
Pplat (cmH ₂ O)	21 (14-28)	21 (14-29)	20 (14-27)
ΔP (cmH ₂ O)	10 (6-20)	10 (6-20)	10 (5-19)
RR (bpm)	22 (19-28)	24 (20-31)	22 (15-30)
FiO ₂ (%)	48 (30-60)	43 (30-60)	45 (30-55)

ASV

N=12

	Day 1		
	Time point 1	Time point 2	Time point 3
MP (J/min)	14.8 (7.2-34.5)	17.5 (8.6-57.4)	16 (7.6-58.7)
Tidal volume (ml)	447 (337-601)	523 (314-594)	510 (442-774)
PEEP (cmH ₂ O)	6 (5-15)	9 (5-14)	9 (5-14)
Ppeak (cmH ₂ O)	22 (13-36)	24 (17-47)	23 (14-47)
Pplat (cmH ₂ O)	19 (12-29)	19 (12-32)	18 (13-32)
ΔP (cmH ₂ O)	10 (4-17)	8 (3-22)	8 (5-18)
RR (bpm)	19 (12-38)	20 (11-32)	19 (13-28)
FiO ₂ (%)	75 (40-100)	48 (25-95)	40 (25-100)

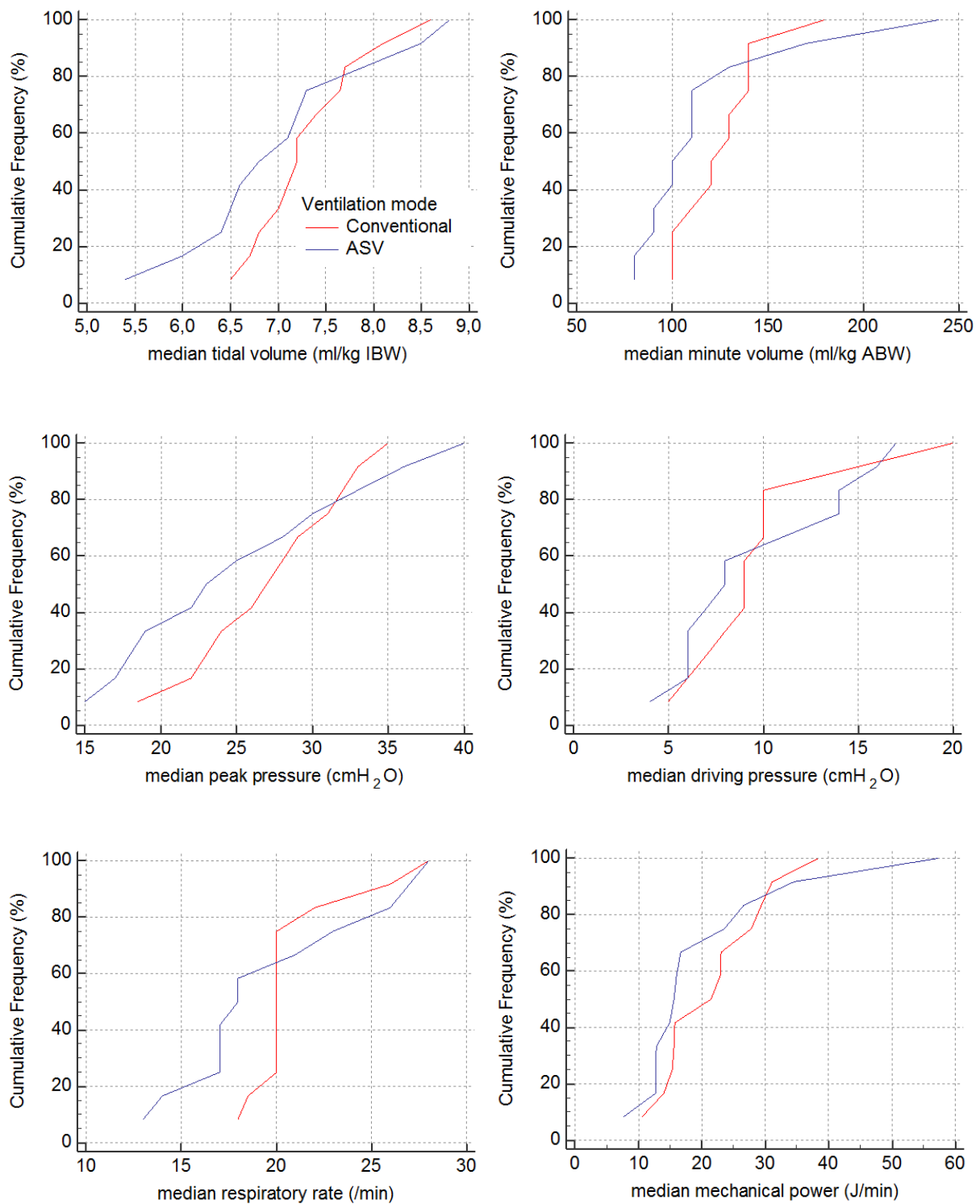
	Day 2		
	Time point 1	Time point 2	Time point 3
MP (J/min)	16.9 (6.6-67.2)	15.7 (6.1-50.5)	13.3 (6.7-47.9)
Tidal volume (ml)	500 (403-729)	515 (390-781)	510 (350-690)
PEEP (cmH ₂ O)	9 (5-14)	8 (5-14)	8 (5-16)
Ppeak (cmH ₂ O)	23 (16-49)	24 (17-45)	21 (16-39)
Pplat (cmH ₂ O)	19 (12-32)	19 (12-32)	18 (12-29)
ΔP (cmH ₂ O)	10 (4-18)	11 (4-18)	9 (6-15)

RR (bpm)	18 (14-30)	16 (12-30)	19 (13-29)
FiO ₂ (%)	38 (25-75)	38 (25-80)	35 (25-100)

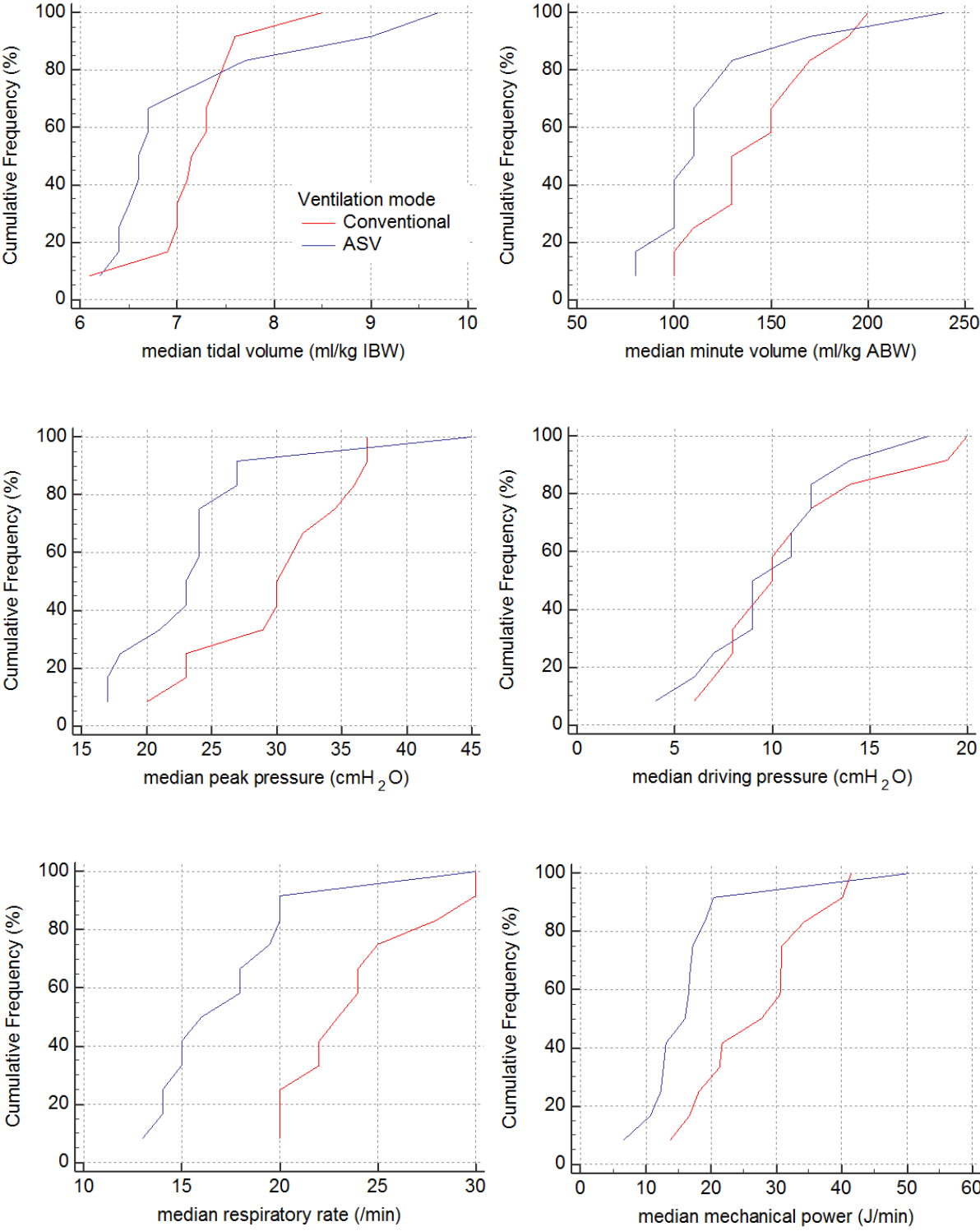
Data are median (min-max) or No/Total(%)

MP: mechanical power PEEP: positive end expiratory pressure Ppeak: peakpressure Pplat: plateau pressure ΔP : driving pressure (Pplat-PEEP) RR: respiratory rate in beats per minute FiO₂: inspired fraction of oxygen

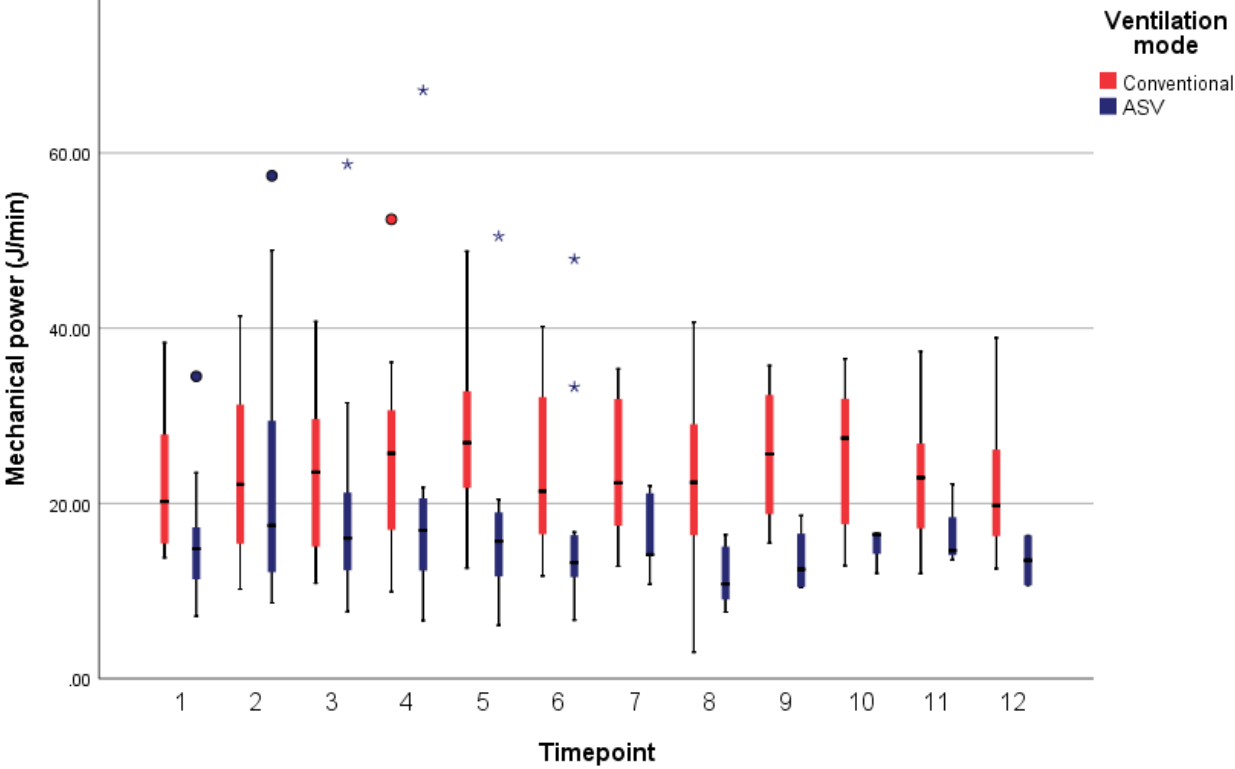
eFigure1. Differences between conventional ventilation and adaptive support ventilation (ASV) between ventilation parameters used for the equation of mechanical power and showing the tidal volume in ml/kg/IBW, minute volume in ml/kg ABW and the mechanical power in J/min at day 1



eFigure2. Differences between conventional ventilation and adaptive support ventilation (ASV) between ventilation parameters used for the equation of mechanical power and showing the tidal volume in ml/kg, minute volume in ml/kg ABW and the mechanical power in J/min at day 2

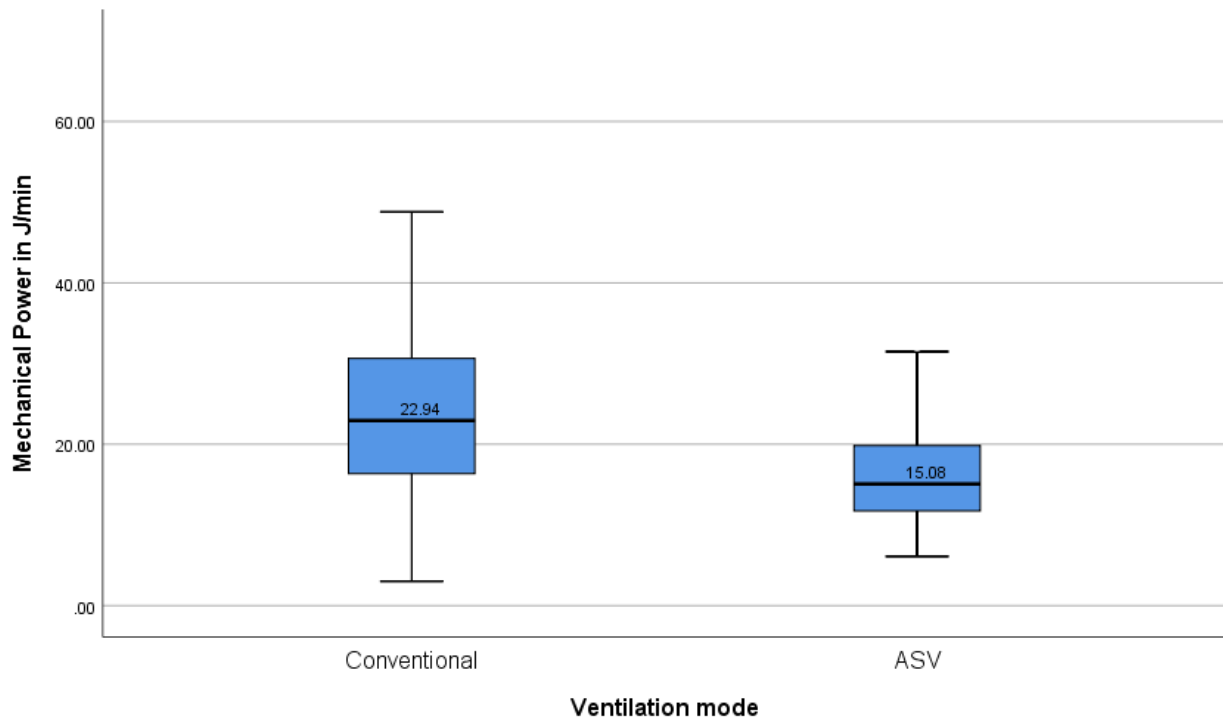


eFigure 3. Difference in MP between closed-loop and conventional ventilation over time



eFigure 3 Difference in MP between closed-loop and conventional ventilation. It shows the height of MP in Joule per minute, calculated in 12 time points. The difference in MP between closed-loop (blue) and conventional ventilation (red) was present at all time points

eFigure 4. Difference in MP in J/min in the whole cohort



eFigure 4 Showing the difference in MP in the whole cohort between conventional (pressure controlled) ventilation and closed-loop (ASV) ventilation.

eFigure 5. Difference in MP between closed-loop and conventional ventilation on day 1, timepoint 1

