Supplemental material

Table S-1: Results from measurements with less clinically relevant combinations of mask size and tidal volume.

O2 start	Leak	Tidal volume	Dead space	System	Sec (mean)	95% CI	SD
100 %	Yes	4 ml	26 ml	rPAP	70.6	70.5-70.8	3.4
			26 ml	neopuff	76.4	76.3-76-6	3.9
		10 ml	13 ml	rPAP	58.3	58.0-58.8	4.6
			13 ml	neopuff	63.7	63.5-63.9	4.6
	No	4 ml	26 ml	rPAP	*		
			26 ml	neopuff	*		
		10 ml	13 ml	rPAP	72.4	72.2-72.5	3.8
			13 ml	neopuff	86.0	85.8-86.2	4.3
30 %	Yes	4 ml	26 ml	rPAP	51.6	51.5-51.8	3.5
			26 ml	neopuff	55.5	55.4-55.7	3.7
		10 ml	13 ml	rPAP	40.5	40.3-40.6	3.3
			13 ml	neopuff	44.2	44.0-44.3	3.3
	No	4 ml	26 ml	rPAP	189.4	188.8-189.9	0.7
			26 ml	neopuff	*		
		10 ml	13 ml	rPAP	53.7	53.5-53.9	3.6
			13 ml	neopuff	61.9	61.8-62.1	3.9

Supplement table 1 (S-1): Time until 0.05 +/- from target O2 concentration when decreasing FiO2 from 1.0 to 0.5 and when incresing FiO2 from 0.3 to 0.6. *Never reached 0.05 from target during the 240 seconds of measurements.

Table S-2 shows mean FiO_2 measured at the patient interface 15, 30, 45, 60, 90 and 180 seconds after FiO_2 adjustment at the blender, according to the added dead-space, tidal volume and presence or absence of leak.

					Mean FiO_2 at time interval					
Leak	**TV**	**Dead-space**	**System**	**FiO2 changes**	**15 sec**	**30 sec**	**45 sec**	**60 sec**	**90 sec**	**180 sec**
No leak	4 mL	Prongs	rPAP	1.00->0.5	.63	.56	.53	.52	.51	.
		13 mL	rPAP	1.00->0.5	.85	.78	.73	.68	.62	.54
		13 mL	Neopuff	1.00->0.5	.89	.81	.76	.71	.65	.55
	10 mL	Prongs	rPAP	1.00->0.5	.57	.51	.50	.50	.50	.
		26 mL	rPAP	1.00->0.5	.87	.79	.73	.68	.61	.53
		26 mL	Neopuff	1.00->0.5	.88	.80	.74	.69	.62	.53
	4 mL	Prongs	rPAP	0.3->0.6	.52	.56	.58	.59	.60	.
		13 mL	rPAP	0.3->0.6	.39	.43	.47	.49	.53	.58
		13 mL	Neopuff	0.3->0.6	.37	.41	.45	.47	.51	.57
	10 mL	Prongs	rPAP	0.3->0.6	.55	.59	.60	.60	.60	.
		26 mL	rPAP	0.3->0.6	.38	.43	.47	.50	.54	.59
		26 mL	Neopuff	0.3->0.6	.37	.42	.46	.49	.53	.58
With leak	4 mL	Prongs	rPAP	1.00->0.5	.62	.55	.53	.51	.50	.
		13 mL	rPAP	1.00->0.5	.73	.65	.59	.56	.53	.50
		13 mL	Neopuff	1.00->0.5	.75	.65	.60	.57	.53	.50
	10 mL	Prongs	rPAP	1.00->0.5	.57	.52	.50	.50	.50	.
		26 mL	rPAP	1.00->0.5	.80	.70	.63	.59	.54	.51
		26 mL	Neopuff	1.00->0.5	.79	.69	.63	.58	.54	.50
	4 mL	Prongs	rPAP	0.3->0.6	.52	.56	.58	.59	.60	.
		13 mL	rPAP	0.3->0.6	.46	.52	.55	.57	.59	.60
		13 mL	Neopuff	0.3->0.6	.45	.51	.54	.56	.58	.60
	10 mL	Prongs	rPAP	0.3->0.6	.56	.59	.60	.60	.60	.
		26 mL	rPAP	0.3->0.6	.43	.49	.53	.56	.58	.60
		26 mL	Neopuff	0.3->0.6	.43	.49	.53	.56	.58	.60

Supplemental table 2 (S-2): Mean oxygen concentration at different time intervals after adjustments. As the set O2 level was achieved earlier for rpap with prongs compared to rPAP and neopuff with added dead-space, measurements were stopped before 180 seconds.

Table S-3 shows the mean time (sec) it took to reach 0.05 +/- from target O2 concentration when decreasing FiO_2 from 1.0 to 0.5 and when increasing from 0.3 to 0.6. Shown with 95% confidence interval and standard deviations.

O2 start	Leak	Tidal volume	Dead space	System	Sec (mean)	95% CI	SD
100 %	Yes	4 ml	13 ml	rPAP	66.65	66.49-66.81	3.76
			13 ml	neopuff	69.56	69.40-69.72	3.80
			Prongs	rPAP	32.29	32.11-32.47	3.23
		10 ml	26 ml	rPAP	82.96	82.81-83.12	4.0
			26 ml	neopuff	78.87	78.71-79.03	3.79
			prongs	rPAP	18.34	18.18-18.49	1.97
	No	4 ml	13 ml	rPAP	154.59	154.41-154.77	6.22
			13 ml	neopuff	172.71	172.46-172.97	7.42
			Prong	rPAP	33.30	33.13-33.47	3.12
		10 ml	26 ml	rPAP	143.82	143.65-143.98	5.29
			26 ml	neopuff	153.37	153.15-153.60	7.56
			prongs	rPAP	18.30	18.14-18.46	2.01
30 %	Yes	4 ml	13 ml	rPAP	47.06	46.91-47.21	3.38
			13 ml	neopuff	51.36	51.21-51.51	3.49
			prongs	rPAP	23.76	23.57-23.94	3.43
		10 ml	26 ml	rPAP	56.19	56.04-56.34	3.39
			26 ml	neopuff	55.52	55.37-55.68	3.41
			prongs	rPAP	13.32	13.15-13.49	2.13
	No	4 ml	13 ml	rPAP	113.10	112.95-113.25	4.93
			13 ml	neopuff	137.59	137.43-137.75	5.85
			prongs	rPAP	25.00	24.82-25.18	3.49
		10 ml	26 ml	rPAP	103.68	103.45-103.92	7.18
			26 ml	neopuff	115.60	115.44-115.76	5.26
			prongs	rPAP	14.79	14.64-14.94	2.05

Supplement table 3 (S-3): Time until 0.05 +/- from target O2 concentration when decreasing FiO_2 from 1.0 to 0.5 and when increasing from 0.3 to 0.6.