

1 **Combined effects of leaks, respiratory system properties and upper airway patency on**
2 **the performance of home ventilators: A bench study**

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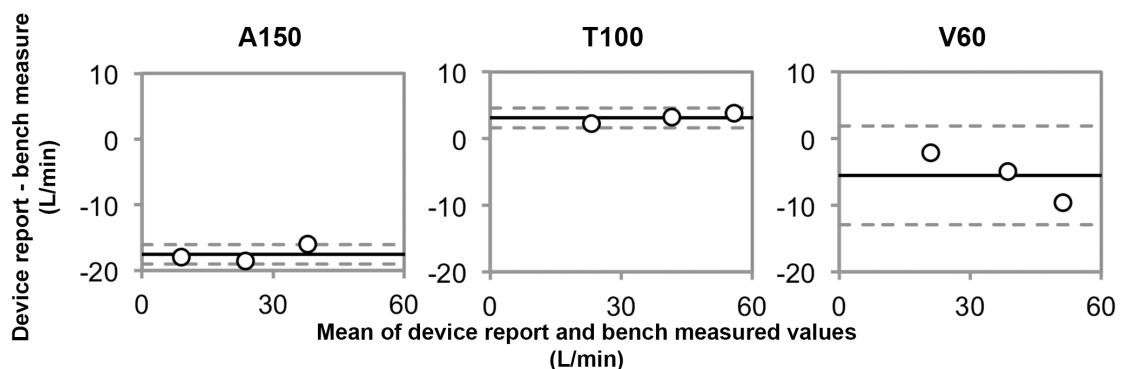
6 **Additional File 3: Comparison of leaks between device reports and bench-measured**
7 **values**

8 **i. Protocol**

9 To compare the accuracy of estimated leaks provided by the devices, each device was connected to the
10 bench model configured as COPD condition (Additional File 1) with open UAs. Tests were performed
11 with intermediate inspiratory trigger sensitivity for each device and other settings were identical to that
12 shown in Table 1 in the main text. Each ventilator was successively tested with three calibrated total
13 leak levels (24, 48 and 72 L/min at 10 cmH₂O) for 5 minutes. The mean total leaks (median for A150)
14 were compared between the device reports and the bench-measured values. Of note, A150 reports
15 mean leak value during cycles and intentional leak is not included (1). For T100, the device-provided
16 leak is the average leak of the whole breathing cycle and includes intentional and non-intentional leaks
17 (2–4). Differently, V60 provides average leak during EPAP (i.e., the lowest value during the cycle)
18 and includes intentional and non-intentional leaks (2,3,5).

19 **ii. Results**

20 The Bland-Altman plots showing the differences between the total leak values obtained from the
21 device reports and that measured on the bench are shown in Figure S3-1. The means differences were -
22 17.5±0.8, 3.1±0.8 and -5.5±3.8 L/min respectively for A150, T100 and V60. For V60, the higher the
23 total leak, the greater the bias compared to the bench-measured value: the leak in the device report
24 underestimated the measured leak of 56 L/min by 9.6 L/min (Figure S3-1).



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26 **Figure S3-1: Bland-Altman plots: device-reported total leak values vs. bench measured values.** Median
27 leak values are presented for A150 and mean leak values are presented for T100 and V60. The solid lines
28 represent the bias (average differences between device reports data and bench-measured values), and the dashed

1 lines represent the limits of agreement at 95% CI for these differences (± 1.96 SD). A150: Astral 150; T100:
2 Trilogy 100; V60: Vivo 60. Note that A150 reported non-intentional leak while other two devices reported total
3 leak.

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