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**Title:** Inaccuracy of built-in ventilator softwares (BIVS) in monitoring apnea-hypopnea index (AHI) in patients treated by home non invasive ventilation (NIV)

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**Body:** Home ventilators are often equipped with BIVS able of recording various parameters over many months. AHI is one of the parameter most frequently used by clinicians to monitor efficiency of ventilation applied to patients with Obstructive Sleep Apneas (OSA). However, the reliability of algorithms used by BIVS to detect apnea (A) or hypopnea (H) has yet to be determined. Patients & Methods. We studied 5 patients with severe OSA (4M, 1F, 10.5 years, range 2.5-15 years) and treated by NIV (4 CPAP, 1 BiPAP). An overnight respiratory polygraphy (RP) was performed while the patient was on NIV at home. All RP were analyzed as usually recommended by one of us (J.T) blinded to BIVS data. We compared A and H detected by BIVS versus those detected by RP. Results. BIVS detected 169 A-H that were related to movements in 56% and no visible event using RP in 25% of cases.

Table 1

	Nb of events (%)	Movements-RP	No event-RP	A-RP	H-RP
A-VS	28 (100%)	21 (75%)	4 (14%)	2 (7%)	1 (4%)
H-VS	141 (100%)	74 (52%)	39 (28%)	9 (6%)	19 (13%)
A-H-VS	169 (100%)	95 (56%)	43 (25%)	31 (18%)	

Among the 88 A-H detected by RP, only 35% were recognized by BIVS.

Table 2

	Nb of events (%)	No event-VS	A-VS	H-VS
A-RP	19 (100%)	8 (42%)	2 (11%)	9 (47%)
H-RP	69 (100%)	49 (71%)	1 (1%)	19 (28%)

A-H-RP	88 (100%)	57 (65%)	31(35%)
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Conclusion. The majority of A-H detected by BIVS was related to patient movements, whereas BIVS was unable to detect A-H seen in RP. These preliminary data support that AHI provided by BIVS is largely inaccurate in patients during NIV and should not be used to adjust NIV. Polysomnographies are required to monitor efficiency of NIV.