

Sleep Medicine

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Portable home studies (unsupervised) vs Lab studies

The general consensus is that:

Unsupervised home studies are appropriate for patients with high clinical probability of obstructive sleep apnoea (apnoea/hypopnoea index usually about 30 per hour)

Not appropriate and less reliable in people with co-morbidities

- Severe pulmonary disease (high failure rate)
- Neuro-muscular disease
- Heart failure
- Central apnoea
- Narcolepsy
- Obesity, hypoventilation
- Patients on oxygen

Combined with appropriate clinical assessment and selection of patients the comparison between in home vs. lab study

AHI by PSG and PM (Diagnostic Agreement)

	PSG vs. PM (simultaneous recording in sleep center)	PSG in sleep center vs. PM at home
AHI (no. per hour)	AHI PSG 26 ± 28 AHI PM 27 ± 23	AHI PSG = 23 ± 24 AHI PM = 23 ± 24
Diagnostic Agreement*	91%	83%
Overestimation of AHI*	8%	10%
Underestimation*	1%	7%
Using PM AHI cutoff of ≥ 5 hr	Sensitivity: 0.98 Specificity: 0.62 Positive predictive value: 0.87 Negative predictive value: 0.93	Sensitivity: 0.93 Specificity: 0.50 Positive predictive value: 0.85 Negative predictive value: 0.76

Agreement:*

Diagnostic agreement: AHI by PSG and PM both > 30 per hour or AHI difference ± 10 per hour or less

Overestimation: PSG AHI less than 30 per hour, AHI PM $>$ AHI PSG by 10 per hour or more.

Underestimation: PSG AHI less than 30 per hour, AHI PM $<$ AHI PSG by 10 per hour or more.

Data from: Santos-Silva, R., Sartori, D. E., Truksinas, V., Truksinas, E., Alonso, F. F., Tufik, S., & Bittencourt, L. R. (2009). Validation of a portable monitoring system for the diagnosis of obstructive sleep apnea syndrome. *Sleep*, 32, 629–636.

In our unit at Sleep Medicine the agreement is as follows:

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Concordance correlation coefficient

Variable Y	Lab_study Lab study
Variable X	Home_study Home study
Sample size	1000
Concordance correlation coefficient	0.8516
95% Confidence interval	0.8337 to 0.8677
Pearson ρ (precision)	0.8536
Bias correction factor C_b (accuracy)	0.9977

There are different sleep studies available supervised and unsupervised as follows:

Level 1:

- Respiratory and EEG in Sleep Lab

Level 2:

- Respiratory and EEG at home

Level 3:

- Respiratory with no EEG

Level 4

- Oximetry alone, oximetry plus nasal flow

Sleep Medicine provides all levels of testing depending on the assessment of the patients' condition (sites at Warners Bay Private Hospital and our Charlestown Practice).

One application on Level 3 (respiratory but no EEG) is for titration of oral appliances before establishing the amount of mandibular advancement.

Do not hesitate to contact me to discuss any of the above.

Regards
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