compliance may not be generalised to all kinds of therapy, as it seems that adherence to therapy may vary across different pathologies and therapeutic approaches [10].

Thus, regarding intermittent CPAP use, not only is information to believe it could improve adherence scarce, but also, it could even diminish patients' perception of the importance of regular use, deteriorating previous strategies developed to enhance adherence [6], so caution should be advised until further studies have been conducted.

@ERSpublications
Information to believe intermittent CPAP could improve adherence is scarce http://ow.ly/DgZAi

Mafalda van Zeller[1] and Marta Drummond[1,2]
[1]Dept of Pulmonology, Centro Hospitalar de São João, Porto, Portugal. [2]Faculty of Medicine, University of Porto, Porto, Portugal.

Correspondence: Mafalda van Zeller, Dept of Pulmonology, Centro Hospitalar de São João, Alameda Professor Hernâni Monteiro, 4200-319 Porto, Portugal. E-mail: vanzeller.mafalda@gmail.com

Received: July 20 2014 | Accepted: July 30 2014

Conflict of interest: None declared.

References

1 Rossi VA, Schwarz EI, Bloch KE, *et al*. Is continuous positive airway pressure necessarily an everyday therapy in patients with obstructive sleep apnoea? *Eur Respir J* 2014; 43: 1387–1393.
2 Strohl KP, Wellman A. When CPAP is stopped: what are the "on switches" of sleep apnoea? *Eur Respir J* 2014; 43: 1227–1229.
3 Epstein LJ, Kristo D, Strollo PJ Jr, *et al*. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. *J Clin Sleep Med* 2009; 5: 263–276.
4 van Zeller M, Severo M, Santos AC, *et al*. 5-years APAP adherence in OSA patients – do first impressions matter? *Respir Med* 2013; 107: 2046–2052.
5 McArdle N, Devereux G, Heidarnejad H, *et al*. Long-term use of CPAP therapy for sleep apnea/hypopnea syndrome. *Am J Respir Crit Care Med* 1999; 159: 1108–1114.
6 Soares Pires F, Drummond M, Marinho A, *et al*. Effectiveness of a group education session on adherence with APAP in obstructive sleep apnea – a randomized controlled study. *Sleep Breath* 2013; 17: 993–1001.
7 Budhiraja R, Parthasarathy S, Drake CL, *et al*. Early CPAP use identifies subsequent adherence to CPAP therapy. *Sleep* 2007; 30: 320–324.
8 Kruk ME, Schwalbe N. The relation between intermittent dosing and adherence: preliminary insights. *Clin Ther* 2006; 28: 1989–1995.
9 Cooper C. Beyond daily dosing: clinical experience. *Bone* 2006; 38: Suppl. 1, S13–S17.
10 Yeaw J, Benner JS, Walt JG, *et al*. Comparing adherence and persistence across 6 chronic medication classes. *J Manag Care Pharm* 2009;15:728–740.

Eur Respir J 2015; 45: 574–575 | DOI: 10.1183/09031936.00137014 |

From the authors:

We appreciate the interest shown by M. van Zeller and M. Drummond in our paper [1], who suggest a more cautious interpretation regarding the possibility of withdrawing continuous positive airway pressure (CPAP) therapy for short periods and raise some concerns about how to select candidates properly who might safely undergo this.

In our study, we observed that about one-third of patients affected by obstructive sleep apnoea (OSA) syndrome and treated with CPAP did not experience recurrence of oxygen desaturations after four nights of CPAP therapy withdrawal, and about 10% did not after 2 weeks [1]. Therefore, we put forward the hypothesis that some patients may be able to stop CPAP for short periods without recurrence of OSA and its related pathophysiological consequences. As already addressed in our article [1], we agree that the use of pulse oximetry and its derivatives (oxygen desaturation index (ODI)) to assess sleep-disordered breathing has its limitations, although most researchers have found near equivalence of apnoea–hypopnoea index (AHI) to ODI. Neither conventional AHI measurements nor oximetric derivatives capture sleep

fragmentation from increases in upper airway resistance and we agree that these subtle impairments in upper airway function during sleep need much more sophisticated measurements. However, we feel that our paper provides useful information to both researchers who may wish to use the CPAP withdrawal model [2, 3] in their studies (and thus need to perform sample size estimations), and to those who have made similar observations in daily clinical practice and thus are interested in performing a larger and more detailed study looking at the temporal recurrence of OSA and its pathophysiological consequences.

M. van Zeller and M. Drummond also raised the question of whether weight loss would explain the lack of OSA recurrence after CPAP withdrawal in some of the included patients. In the patients who underwent 2 weeks of CPAP withdrawal, the body mass index (BMI) at the time of the study was not statistically different to that at diagnosis (difference 0.09 $kg \cdot m^{-2}$, SD 1.59; p=0.96) nor was there a statistically significant reduction in neck circumference (difference −0.83 cm, SD 1.33; p=0.57). Furthermore, in multivariate analysis, we were not able to find any statistically significant association between current BMI and ODI after short-term CPAP withdrawal [1].

In the majority of studies looking at causes of OSA, the factors usually identified (neck size, craniofacial shape, tongue size and abdominal obesity) rarely explain more than 50% of the variation in OSA severity. This therefore implies that other factors (*e.g.* mucosal oedema of the pharynx, dilator muscle fatigue, *etc.*) are also important in the pathogenesis of OSA [4]. Such factors may well vary over time and may be improved even by intermittent use of CPAP therapy.

@ERSpublications
Unconventional factors involved in OSA pathogenesis may vary over time and may be improved even by intermittent CPAP http://ow.ly/DemVu

Valentina A. Rossi[1], John Stradling[2,3] and Malcolm Kohler[1,4,5]
[1]Sleep Disorders Centre and Pulmonary Division, University Hospital of Zurich, Zurich, Switzerland. [2]Oxford Centre for Respiratory Medicine, Churchill Hospital, Oxford, UK. [3]NIHR Biomedical Research Centre, Oxford, UK. [4]Zurich Centre for Integrative Human Physiology, University of Zurich, Zurich, Switzerland. [5]Zurich Centre for Interdisciplinary Sleep Research, University of Zurich, Zurich, Switzerland.

Correspondence: Valentina A. Rossi, Pulmonary Division, University Hospital of Zurich, Rämistrasse 100, Zurich 8001, Switzerland. E-mail: valereds@gmail.com

Received: Aug 09 2014 | Accepted: Aug 12 2014

Conflict of interest: Disclosures can be found alongside the online version of this article at erj.ersjournals.com

References

1 Rossi VA, Schwarz EI, Bloch KE, *et al.* Is continuous positive airway pressure necessarily an everyday therapy in patients with obstructive sleep apnoea? *Eur Respir J* 2014; 43: 1387–1393.
2 Kohler M, Stoewhas AC, Ayers L, *et al.* Effects of continuous positive airway pressure therapy withdrawal in patients with obstructive sleep apnea: a randomized controlled trial. *Am J Respir Crit Care Med* 2011; 184: 1192–1199.
3 Rossi VA, Winter B, Rahman NM, *et al.* The effects of Provent on moderate to severe obstructive sleep apnoea during continuous positive airway pressure therapy withdrawal: a randomised controlled trial. *Thorax* 2013; 68: 854–859.
4 Ryan CF, Lowe AA, Li D, *et al.* Magnetic resonance imaging of the upper airway in obstructive sleep apnea before and after chronic nasal continuous positive airway pressure therapy. *Am Rev Respir Dis* 1991; 144: 939–944.