

# Graduated OSA Coaching: A Solution To OSA Patient Treatment Non-Compliance

**Abstract.** Untreated Obstructive Sleep Apnea (OSA) is both detrimental to health and expensive. Potential patient outcomes include obesity, high blood pressure, stroke, clinical depression, and cardiovascular disease. Aside from the negative health outcomes, the financial costs of these negative outcomes are passed on both to the insurer and, in the form of higher premiums, to all consumers. This Innocentive proposal, a response to challenge 9933907, “Improving Adherence for Obstructive Sleep Apnea Treatment,” suggests an early, personalized educational intervention system called **Graduated OSA Coaching**, modeled on Ontario’s Diabetes Education Program, as an evidence-based investment designed to increase patient outcomes and lower healthcare-provision costs over time.

## 1. Barriers to Treatment

One of the primary barriers to effective management of OSA, and thus prevention of negative patient outcomes, is treatment non-compliance. There are many potential reasons for non-compliance, but most seem to center around the discomfort, inconvenience, or psychology surrounding the use of Continuous Positive Airway Pressure (CPAP) machines, which are the primary treatment for OSA. Because of the variety of normal sleeping positions and sleep activity, the frustrations inherent in being unable to sleep, and the perceived stigma of using a medical device for the rest of one’s life, many OSA sufferers fail to effectively treat their symptoms. Nevertheless, there already exist solutions to these problems, suggesting that **the secret to increased compliance lies in better patient education and reinforcement.**

## 2. From Diabetes to OSA

A similar problem is also being faced with regard to another medical condition: diabetes. Like OSA, the negative consequences of treatment non-compliance are costly both from a human health perspective and a financial one. In response to this, the Canadian province of Ontario has adopted a program known as the **Diabetes Education Program**.<sup>1</sup> This program provides early intervention by educated professionals to instruct diabetic patients in the best ways to manage their condition and improve their later health outcomes. It is paid for by the province’s single-payer health insurer (the Ontario Health Insurance Plan or OHIP) as a way of reducing down-the-line financial costs from negative health outcomes which require more expensive treatment. **A similar model could be implemented by insurers to improve health outcomes and reduce down-the-line costs from patient non-compliance.**

---

<sup>1</sup> <https://www.ontario.ca/page/diabetes-education-program>

**A number of studies have demonstrated the efficacy of educational intervention in OSA patients.**

A 2006 study published in the journal *Patient Education and Counseling* found that small-group workshops significantly increased patient CPAP compliance,<sup>2</sup> and a 2015 study published in the journal *BMC Pulmonary Medicine* determined that “a simple phone coaching procedure based on knowledge of the disease and reinforcement messages about treatment benefits helps to improve CPAP adherence.”<sup>3</sup>

A 1997 study published in the journal *Sleep* also found that increased compliance was correlated with earlier interventions,<sup>4</sup> and a 2011 study in the journal *Behavioral Sleep Medicine* found that patterns set in initial treatment are not easily altered.<sup>5</sup> These, taken alongside the group workshop and phone coaching studies, suggests that **the best educational intervention program for OSA patients would begin early and taper off over time.**

### **3. The Graduated OSA Coaching Program**

Graduated OSA Coaching would take three forms over the course of the program: **Personal OSA Coaching, Group Workshopping, and Telepresence Follow-Ups.** These will work together in an educational program to increase patient compliance, beginning with the most structure and support, and ending with the most patient responsibility.

#### **3.1 Personal OSA Coaching**

Initial patterns of OSA treatment compliance are hard to alter once set. Therefore, **from the point of diagnosis, the patient would be assigned a Personal OSA Coach** to ensure the best possible patient experience. Like the Diabetes Educators in Ontario, the Personal OSA Coach would be a professional whose job it is to introduce the patient to OSA and their treatment options. This would include exploring different types of CPAP machines and interfaces, pillows, and best sleeping practices, in order to maximize patient comfort, while at the same time creating an individualized support system for the patient when they encounter treatment roadblocks. Personal OSA Coaches should also be sure to gently reinforce the negative consequences of patient non-compliance, as studies have shown that negative message framing increases CPAP compliance when compared to positive.<sup>6</sup> While the one-on-one time with the coach would decrease after the initial weeks, **the Personal OSA Coach is and remains the patient’s guide through the Graduated OSA Coaching Program.**

---

<sup>2</sup> Alain Golay, Anne Girard, Stéphane Grandin (et al.) “A new educational program for patients suffering from sleep apnea syndrome.” *Patient Education and Counseling* 60.2 (2006).

<sup>3</sup> Kamila Sedkaoui, Ludivine Leseux, Sandrine Pontier (et al.) “Efficiency of a phone coaching program on adherence to continuous positive airway pressure in sleep apnea hypopnea syndrome: a randomized trial.” *BMC Pulmonary Medicine* 15.102 (2015).

<sup>4</sup> RD Chervin, S Theut, C Bassetti (et al.) “Compliance with nasal CPAP can be improved by simple interventions.” *Sleep* 20.4 (1997).

<sup>5</sup> Robin Trupp, Elizabeth Corwin, Karen Ahijevych (et al.), “The Impact of Educational Message Framing on Adherence to Continuous Positive Airway Pressure Therapy.” *Behavioral Sleep Medicine* 9 (2011).

<sup>6</sup> Robin Trupp, Elizabeth Corwin, Karen Ahijevych (et al.), “The Impact of Educational Message Framing on Adherence to Continuous Positive Airway Pressure Therapy.” *Behavioral Sleep Medicine* 9 (2011).

### 3.2 Group Workshopping

Peer reinforcement is an important part of adherence to any taxing treatment regimen. As such, the Graduated OSA Coaching Program would move from one-on-one coaching in the first stage to weekly or bi-weekly meetings of three to four OSA patients to discuss personal roadblocks to treatment and strategies to aid compliance. These meetings would ideally be supervised by the patients’ Personal OSA Coach, though this could vary depending on subscription to the program. **Supervisors would encourage patients through a variety of means, including “gamification” of various progress scores, mutual reinforcement stories focusing on the benefits of CPAP use, and troubleshooting of shared problems.** They would also be present to steer the conversations away from too much negative reinforcement, as this could potentially harm treatment compliance.

### 3.3 Telepresence Follow-Ups

Maintaining a social safety network is important for ensuring long-term compliance and dealing with new issues as they emerge. At this stage in the program, the OSA patients would “graduate” to the final stage, where their Personal OSA Coach would simply call or videoconference with the patient for a few minutes every other week. Though brief, these calls would **reinforce the patient’s understanding of the continued importance of adherence to their treatment**, as well as giving them an outlet for any emergent concerns as time progresses. Furthermore, maintaining a connection with the patient would allow their Personal OSA Coach to **suggest new treatment options as they become available**, for example the in-development “micro-CPAP” under development by startup Airing (should it ever materialize).<sup>7</sup>

## 4. Conclusion

Untreated OSA leads to negative patient welfare outcomes and significant expense for insurers, but the problems that lead to patient non-compliance can largely be avoided by insurer investment in early-intervention education and personalized support. The Graduated OSA Coaching Program concept is a small investment insurers could make to lower their overall treatment costs and reduce negative health outcomes for OSA patients over time.

---

<sup>7</sup> <http://www.fundairing.com/journal/2016/4/12/airing-micro-cpap-video-progress-update>