

Increase in the number of patients remaining on CPAP therapy

A new program using the ResMed AirFit P10 Mask to reduce the number of patients who withdraw from CPAP therapy

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Background

Despite the effectiveness and known benefits of CPAP¹, adherence rates range from 30-60%². Even more concerning is that > 30% of patients will withdraw from CPAP therapy entirely^{1,3}.

Mask selection is likely to affect a patient's experience with CPAP therapy and compliance. Weaver⁴ listed patient-centered mask and machine selection as one of the critical elements to CPAP compliance.

ResMed Homecare Germany manages a large database of patients undergoing CPAP therapy. As with all Homecare companies, a proportion of patients phone the Homecare operators every month wishing to quit CPAP therapy. A percentage of these patients cite mask issues as their reason for quitting therapy.

AirFit P10 mask

ResMed developed a new innovative nasal pillows mask, the AirFit P10 (Figure 1). The AirFit P10 mask design is simple, small and lightweight, and is designed to be quiet, well fitting, non-obtrusive, comfortable, and easy to use. It was hypothesized that this mask system, with increased quietness and comfort, would lead to improved therapy acceptance from CPAP patients.

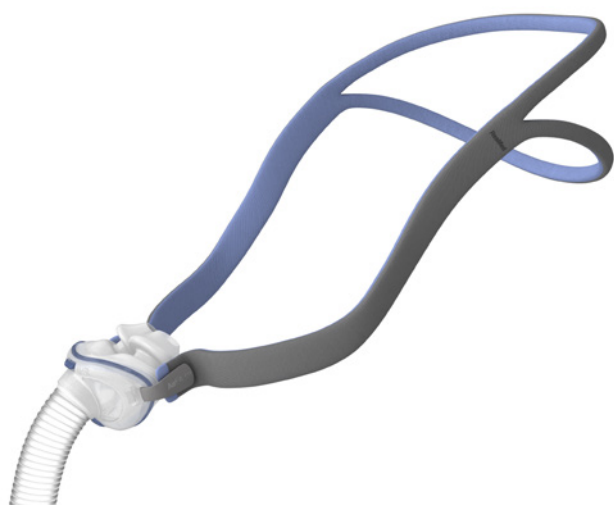


Figure 1. ResMed's AirFit P10 mask

A new program for CPAP dropouts

In February 2014 a new program was introduced to ResMed Homecare Germany. When patients contacted the Customer Service team wishing to quit CPAP therapy due to mask issues, they were told about the new AirFit P10 mask. Patients were asked if they would like to trial this new mask as a final resort before quitting therapy. If the patient agreed then they were mailed the AirFit P10 mask, user guide, and a consent form to allow data collection. The fitting of the mask was unassisted and was based solely on instructions in the user guide.

Patients were asked to use the AirFit P10 mask for two weeks. After one week they were phoned by the Homecare Company to see if they were still using the mask and to complete a short questionnaire about the mask. Patients were then phoned after the second week to see if they were still using the mask, and if they planned to continue with CPAP therapy.

The pilot program ran until a minimum of 50 dropout patients had been offered the AirFit P10 mask.

Patient demographics

Demographics

N	54
Average age	59.8 ± 11.45
Male/ Female	37/17
Time on therapy (range)	6 years - < 3 months

Therapy

Humidifier	52%
Ramp	44%
EPR	35%
APAP	37%
CPAP	56%
Bi-Level	4%
ASV	4%

Mask	
Nasal	72%
Pillows	24%
Other	4%
Previously tried another mask	43%

Table 1. Patient demographics

Results of program

A total of 54 patients contacted ResMed Homecare wishing to quit CPAP therapy due to mask issues. Of these, 33 (61%) remained on therapy after trialing AirFit P10.

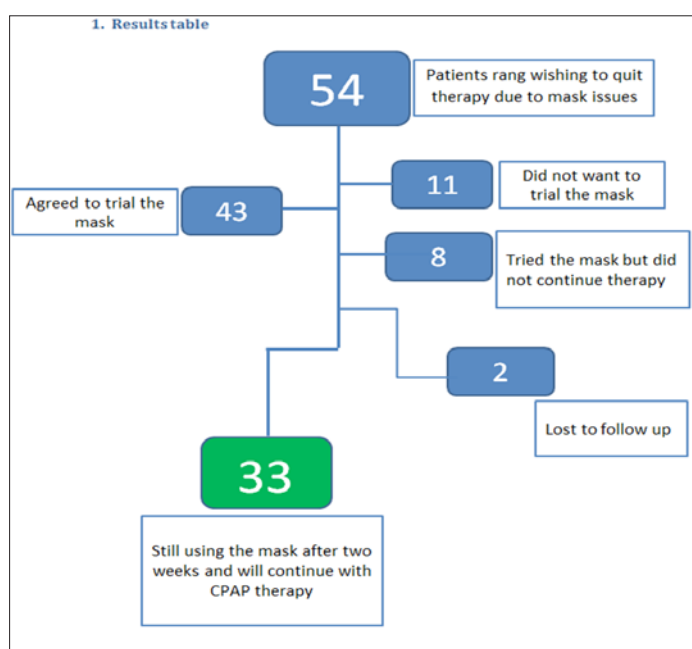


Figure 2. Results of Pilot Program

During the pilot program period, 54 participants called ResMed Homecare Customer Service to quit CPAP therapy. All patients were offered the AirFit P10 for a two week trial.

11 were not interested in trialling the AirFit P10 mask. The remaining 43 patients agreed to trial the mask. They were phoned after one week and two weeks. At the final phone call they were asked if they planned to continue CPAP therapy.

- Eight participants dropped out of the trial
- Two were lost to follow up
- 33 participants responded YES, they were continuing with CPAP therapy.

Participant quotes (when asked if they remained on therapy due to the AirFit P10):

"Best mask I've ever tried"

"Less snoring, less falling asleep problems"

"Better use, more comfortable"

"P10 is simply better"

"P10 made the difference"

"Without the mask [I would have] rejected therapy"

Data analysis

Data was analyzed using the Chi Square Method. In this situation it is reasonable to assume that without the new program 98% of patients in this sample would have quit therapy. This assumption is made because patients were contacting ResMed Homecare Customer Service with the intent of quitting therapy. Before the introduction of the program, Homecare staff would have collected the patient equipment back at the patient's request. It is possible that occasionally Homecare staff may have been able to resolve the issue that the patient wished to quit, however this is expected to be a maximum of one patient per month (2%).

Therefore we can assume that our expected number of quitters is 53 (98%). Our actual number of quitters is 21. Running the Chi Square test we get a $P < 0.01$.

Therefore we can conclude that this program has significantly increased the number of patients that remain on CPAP therapy.

Impact of results

Impact of results on patient health

Untreated OSA has been linked with a number of cardiovascular complications, including hypertension, coronary artery disease, congestive heart failure, cardiac arrhythmias, stroke, and even death.⁵ In addition to cardiovascular morbidity and mortality, untreated OSA is associated with multiple other negative effects, including excessive daytime sleepiness, reduced cognitive function (e.g. alertness, motor function, recall ability) and poor quality of life⁶.

CPAP treatment has been shown to decrease elevated blood pressure, improve cardiovascular disease outcomes, and reduce the risk of cardiovascular fatal and non-fatal events⁷⁻⁹. CPAP treatment also eliminates excessive daytime sleepiness, improves quality of life, and restores cognitive function to normal levels.⁶

By continuing to use CPAP and not dropping out of therapy, the 33 patients in this pilot program can experience improved quality of life, daytime sleepiness, and cognitive function while reducing their risk of cardiovascular events.

Impact of results on health economics

Patients with untreated OSA utilize medical services and use medicines significantly more often than those without OSA¹⁰. Untreated OSA patients are estimated to cost the UK NHS £10,645 per patient over a 14 year period¹¹. It has been estimated that untreated OSA patients in Europe have a two fold increase in medical expenses¹², and Kapur et al¹³ found that untreated OSA patients in the US had an average annual medical cost of \$2,720 compared with \$1,384 for matched controls. The authors also found that the severity of the disease was linked to an increasing medical cost. This untreated OSA was estimated to cost the US an additional \$3.4 billion in medical costs¹³. However when also considering the effects of the disease on fatigue, cognitive functioning, workplace performance, occupational injury, and vehicle accidents, the socio-economic costs are estimated to be immense, running into the billions¹⁴. Treating OSA with CPAP has shown to decrease these excessive medical costs, and is a cost-effective way to manage the disease^{11,12,14}.

The patients in this pilot program who have continued to use PAP therapy can expect to see a decrease in their overall healthcare costs as well as a decrease in physician visits, reducing the burden on the healthcare system.

Impact of results homecare providers and hospitals

We estimate that across Europe > 30% of patients quit CPAP therapy, leading to a high number of untreated OSA patients who are at risk of complications associated with OSA. This also leads to lost revenue and time for Care Providers, who have invested in setting patients up on therapy and ensuring they are treated appropriately. This trial has successfully demonstrated that by using AirFit P10 significantly more patients will remain on therapy. In addition, in this program patients were mailed the mask and expected to fit and adjust it without assistance. The high number of patients able to do this demonstrates the simplicity of the mask.

For Care Providers, using the AirFit P10 means more patients will remain on therapy, leading to:

- greater revenue opportunity
- cost savings
 - Decrease time spent on potential quitters
 - Decreased time in mask set-up (patients set-up was unassisted)
 - Reduction in the number of masks a patient needs to find a solution that will work right away.

Conclusion

This pilot program has demonstrated that the AirFit P10 reduces the number of patients that drop out of PAP therapy. 61% of patients were able to continue with CPAP therapy using the AirFit P10 mask. As such, it is recommended that this program is utilized by all care providers focused on sleep disordered breathing.

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