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Title **Continuous Positive Airway Pressure Devices for the Treatment of Obstructive Sleep Apnoea-Hypopnoea Syndrome: A Systematic Review and Economic Analysis**

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Aim

To determine the clinical effectiveness, safety, and cost effectiveness of continuous positive airway pressure (CPAP) devices in treating obstructive apnea/hypopnea syndrome (OSAHS), compared with the best supportive care, placebo, and dental devices.

Conclusions and results

CPAP is an effective and cost-effective treatment for OSAHS compared with conservative/usual care and placebo in populations with moderate to severe daytime sleepiness, and there may be benefits when the disease is mild. Dental devices may be a treatment option in moderate disease, but some uncertainty remains. The searches yielded 6325 citations, from which 48 relevant clinical effectiveness studies were identified, 29 of which provide data on daytime sleepiness. Most of the RCTs did not report using an adequate method of allocation concealment or an intention-to-treat analysis. Only the studies using a sham CPAP comparator were double blinded. The benefit with CPAP was statistically significant compared to control (placebo and conservative treatment/usual care) on the Epworth Sleepiness Scale (mean difference [MD] –2.7 points, 95% CI –3.45 to –1.96). Statistical heterogeneity was reduced when trials were subgrouped by severity of disease. CPAP showed a significant benefit when compared to usual care on the Maintenance of Wakefulness Test. There was no statistically significant difference between CPAP and dental devices (6 trials) in the impact on daytime sleepiness (ESS) among a population with moderate symptom severity at baseline (MD –0.9, 95% CI –2.1 to 0.4). A review of 5 studies evaluating the cost effectiveness of CPAP was undertaken. All cost-effectiveness studies had limitations. Hence, a new economic model was developed. It was found that, on average, CPAP was associated with higher costs and benefits than dental devices or conservative management. The incremental cost per QALY gained of CPAP was below 20 000 pounds sterling (GBP) in the base-case analysis and most alternative scenarios. CPAP had a high probability of being more cost effective than dental devices and conservative management at a cost-effectiveness threshold of GBP 20 000 per QALY gained.

Recommendations

See Executive Summary link at www.hta.ac.uk/project/1592.asp.

Methods

See Executive Summary link at www.hta.ac.uk/project/1592.asp.

Further research/reviews required

1) The expected value of further information calculated in the York economic model indicates that further research to reduce uncertainty in the current evidence base would be potentially valuable. 2) Further investigation of the effectiveness of CPAP for populations with mild sleepiness is required. 3) Further trials comparing CPAP with dental devices may be useful. 4) Further investigation of the effect of CPAP on hypertension would be beneficial, particularly with respect to what populations might be expected to benefit, as would trials adequately powered to identify changes in cardio/cerebrovascular events

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