Results: Fifty-five of 100 patients in the NHF group and 44 of 100 patients in the control group were admitted to hospital with a respiratory diagnosis during the baseline year. They had 108 admissions in the treatment group vs 89 in the control group, with 632 vs 438 days in hospital, and modeled annual costs of $9443 vs $6512 per patient, respectively. During the study period there were 38 vs 44 patients with 67 vs 80 admissions and 302 vs 526 days in hospital, at a modeled annual cost of $6961 vs $9565 per patient respectively. This resulted in cost savings of $5535 per patient-year (95% CI, -$36 to -$11,034). Taking into account capital expenditure and running costs and with 90% usage over the estimated five-year lifetime of the NHF device, amortized capital costs of $594 per year and annual running costs of $662, we estimate a 5-year undiscounted cost saving per NHF device of $18,626 ($16,934 when discounted to net present value at 5% per annum). There would still be annual cost savings over a wide range of assumptions.