



Editorial

[Translated article] The Cost of Electrical Energy. The End Point in the Precariousness of the Chronic Respiratory Patient



El coste de la energía eléctrica. El punto final en la precariedad del paciente respiratorio crónico

In Spain, 1 million patients use home respiratory therapies (HRT) each year, and this number is increasing at an interannual rate of 8–12%.^{1,2} HRTs cost the public health system over €400 million each year, despite some differences in public procurement between autonomous communities, and are provided to patients free of cost.

The principal HRTs include positive airway pressure therapy for obstructive sleep apnea (CPAP) (66%), continuous home oxygen therapy (HOT) (12%), aerosol therapy (12%), and home non-invasive mechanical ventilation (NIMV) (4%). The remaining 6% consist of other modalities, such as apnea monitors, aspiration and cough assist equipment, pulse oximetry monitoring, etc. At least 20% of patients³ use a combination of several therapies: CPAP plus oxygen therapy, oxygen therapy plus aerosol therapy, low- or high-dependence home mechanical ventilation plus oxygen, monitoring devices, or aspiration systems.

All HRT equipment is powered by electricity. In line with the clinical guidelines,^{4–7} at the time of prescription and during follow-up we advise patients to adhere to certain daily minimum compliance targets: between 15 and 24 h for HOT and a minimum of 4 h for CPAP (ideally more than 6 h). Requirements for NIMV vary widely, but at least 8 h is needed to cover night-time needs, and this may be supplemented with additional hours during the day in the most severe cases. Highly complex NIMV-dependent patients may need support 24 h a day. Compliance, surveillance and telemonitoring clinics have been set up in respiratory medicine departments, especially for patients with CPAP, to improve HRT efficiency and thus reduce costs.^{4–7} This includes withdrawing equipment from non-compliant patients and special follow-up programs for patients who do not meet their clinical targets. Failure to achieve targets may result in discontinuation of therapy. Despite the availability of well-established clinical guidelines, the success of long-term HOT programs varies widely among different regions. A compliance study of patients receiving HOT⁸ evaluated the health status and frailty of oxygen-dependent patients, showing poor adaptation (only 47% and 31% of patients had PaO₂ ≤ 60 mmHg and ≤ 55 mmHg, respectively) and poor therapeutic adherence: only 31% used oxygen ≥ 15 h a day, increasing to 67% in those with

PaO₂ ≤ 60 mmHg. Patients were moderately to severely frail and highly complex. This situation prompted us to reexamine the adaptation, evaluation, and monitoring of patients and, in particular, to investigate further the causes of poor compliance.

Electricity prices have reached historic heights in recent months due to 2 factors: firstly, in August 2021, the price of electricity on the wholesale market reached maximum levels of €106/MWh, triple the €34.63/MWh rate charged in July 2020; and secondly, recent legislative changes in network tariffs introduced to stimulate consumption during off-peak hours have established different regulated prices per kWh for different time bands. This has, in practice, led to a global price increase, prompting government to temporarily reduce VAT from 21% to 10%. These costs must be borne by patients, many of whom are elderly (especially patients receiving HOT) and survive on small retirement pensions.

To make matters worse, energy poverty has grown exponentially in Spain, and is now estimated to affect more than 40% of the population.^{9,10} However, few people, not even healthcare professionals, take into account the electricity costs of chronic respiratory patients. Although some autonomous communities have offered electricity subsidies in the past to help patients cope with their energy bills, these have not been generally maintained and updated, so if they do exist, they must be applied for individually and few patients benefit from the schemes.

To assess the excess energy costs borne by our patients, we calculated the average monthly costs of each of the main HRTs, taking into account the average wattage of each device, the kWh price per time slot (daytime and night-time use), and the ideal number of hours of use. The monthly cost is equivalent to equipment wattage in kW × kWh price × number of hours of daily use × 30 days.

Thus, based on the prices published by an electricity company in July 2021, the additional monthly energy outlay including VAT for 6 h of CPAP use (100 W of power) is €3.40, while oxygen therapy with a 300-W concentrator delivering up to 6 L/m for between 15 and 24 h will cost an additional €26.70–€46.81. The cost of NIMV compliance (200 W) of 8–12 h is between €8.06 and €14.88, and 24 h of ventilator support for a highly dependent patient will cost €31.21. As mentioned above, frailer and generally more dependent patients use a combination of different therapies, with a cumulative increase in overall cost.

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A study by the Environmental Science Association¹¹ specifies several indicators for measuring energy poverty, including people who cannot keep their homes adequately warm, people with arrears on utility bills, people with disproportionate energy costs (whose energy bills are high compared to their income), and so-called hidden energy poverty, which applies to people who spend very little money on energy because they cannot afford it. The latter are not included in the statistics because they are not in arrears and have no obvious difficulties. Energy poverty not only affects the most disadvantaged social classes, but it also threatens broad swathes of society, in particular low-income households, single-parent families with dependent children, retired people, and the elderly. A common factor in most cases is low income.⁹

Chronic respiratory patients, especially oxygen-dependent patients for whom ideal compliance is 24 h, are a clear example of a population affected by hidden energy poverty, and there is little indication of this situation improving, despite advances in HRT technology and progress in routine clinical care. Medical non-compliance for socioeconomic reasons is not recognized in clinical guidelines. Nevertheless, the stigma and the threat of suspending therapy necessary for their survival can be the last straw for many of our patients.

Professionals must take these factors into account when evaluating and monitoring HRTs, and consider the patient's point of view. Health administrations must include estimates of energy costs when preparing HRT tenders in order to at least partially alleviate the excess expenditure. This may be a good time for SEPAR to confront energy poverty and to act as intermediaries and guarantors for our patients in dealing with different stakeholders.

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