
The Quandary of Home-Care Respiratory Management

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Hospital-based physicians and other healthcare insurance providers in Israel are becoming increasingly aware of the need for community-based services – previously considered feasible only in the in-patient domain, usually in long-term healthcare facilities. The paper in this issue of *IMAJ* by Guber et al. [1] is important because it reflects this awareness. Home ventilation is only one example of extended care beyond and outside the hospital. These measures and others, such as intravenous antibiotics for infective endocarditis or other infections, are economically viable, and when judiciously chosen are clinically advantageous alternatives to in-patient care. In Guber's paper the provider is an independent entity, but most of the health maintenance organizations have set up their own "continuation of treatment" services – to both their and their clients' advantage.

In the not too distant past, most entirely ventilator-dependent

patients with a tracheotomy would have been cared for at considerable cost in a quasi-hospital environment. This was considered acceptable by both patients and families. However, for those who were capable of supporting the patient at home and desired an alternative such as home care, the option on a regular basis was not and is not always available. Guber and colleagues show both clinical success and considerable savings that resulted from their professional expertise and the organizational infrastructure that they set up.

However, of the 25 patients described in their report it was not the group that was totally ventilator-dependent and successfully managed at home that represents the most recent advances in this field. Rather, it was those who were non-invasively ventilated by mask – this innovation representing a new approach of considerable significance, both for use and abuse.

Historically, non-invasive ventilation preceded invasive (intubated or tracheotomized) ventilation as a measure for long-term ventilatory support. Negative pressure ventilators were used most commonly in the polio epidemics during the first half of the twentieth century, the most efficient being the "iron lung" described by Drinker and Shaw in 1929 [2]. Non-invasive mask ventilation was initially used as intermittent positive pressure breathing in 1947 and was followed in the early 1980s by the use of soft, and increasingly comfortable and practical nasal and full-face masks for CPAP (continuous positive airway pressure) and BiPAP (bi-level positive airway pressure), in which positive pressure, both inspiratory and expiratory, are applied.

The advantages of non-invasive ventilation are readily apparent. Non-intubation is clearly less traumatic, enables continued use of the mouth for speech and nutrition, and does not require the same degree of expertise in nursing, making it more amenable for home use. On the other hand, its successful employment and adjustment requires far more initial monitoring and attention to patient comfort than intubation and eventual tracheotomy. This point is often overlooked and may explain why it is not used more frequently both in the acute management of patients in respiratory distress on admission to hospital and as the final modality for chronic respiratory failure, instead of tracheotomy, after discharge. In the Israeli healthcare system, we have yet to see an organized effort to train and make use of the expertise of respiratory therapists on a large scale. These personnel have the background and motivation to initiate non-invasive ventilation, the crucial phase in its successful application. It is possible that the presence of more paramedical staff conversant with non-invasive ventilation, making it more convenient and thus more practical to use this modality, will lead to an increase in its use at a considerable savings to the healthcare system and for the benefit of patients and families alike.

There is room for a caveat here. The selection of patients for non-invasive positive pressure ventilation is critical for its successful employment. Guber's study group, mainly patients with neuromuscular disease, reflects a correct selection bias. Neuro-muscular respiratory failure is extremely amenable to NPPV. The efficacy of NPPV for chronic obstructive pulmonary disease is not at all clear and only very select patients benefit from its long-term use. Let us not forget the demise of IPPB on which I, for one, grew up, and used extensively until a well-designed study proved it totally useless and even harmful [3]. There is an urgent need for local medical guidelines for the indications for NPPV. The cost of a typical unit is in the region of some US\$5,000 and a considerable amount is borne by the patient under existing conditions. The state "health basket" should be clearer on this and other respiratory issues.

NPPV = non-invasive positive pressure ventilation
IPPB = intermittent positive pressure breathing

The present "services basket" in the National Health Insurance Law is not at all clear on the indications for all that pertains to respiratory support. This causes great distress and confusion to clinicians taking care of these patients as well as to the patients themselves. In my experience, it is not uncommon for the recommendation for ambulatory respiratory support by a qualified expert in Pulmonology or Intensive care to be overturned by a local HMO committee on the grounds that it is not in "the basket," whereas other areas or other HMOs authorize with equanimity the same modality having the same medical indications. The most glaring example of the lack of clarity on this issue is the provision of liquid oxygen for ambulation in oxygen-dependent patients. This modality, in which liquid oxygen is stored in a thermos flask, making possible the provision of a large amount of oxygen in a small and relatively light container, enables patients freedom of motion outside the home for a number of hours, particularly if the use of an inspiratory demand device is made. The patient refills the thermos himself from a main reservoir at home. Since the indications for liquid oxygen are not clearly defined in the national basket, some HMOs stipulate the holding of a job as grounds for authorizing its use. Another of these provisos for authorizing ambulatory oxygen (but not liquid oxygen) is to enable access to medical care but not for daily living. A 3 L cylinder enables 150 minutes of ambulation at a flow of 3 L per minute and requires a new cylinder every 3 days. This somewhat cynical approach embodies the attitude that the HMOs are responsible for the life, but not the quality of life of their patients, and that liquid oxygen for ambulation is the prerogative only of working individuals while others are confined to their homes until death.

Though not its purpose, the work described in Guber's paper draws our attention to the lag between the advent of newer medical technologies and their coverage under the National Health Insurance Law.

References

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HMO = health maintenance organization

Between two evils, I always pick the one I never tried before.

Mae West (1892–1980), controversial U.S. vaudeville, stage and film actress