

Oxygen Therapy

It can help patients with chronic lung disease and poor memories. But who should have it and who should pay for it?

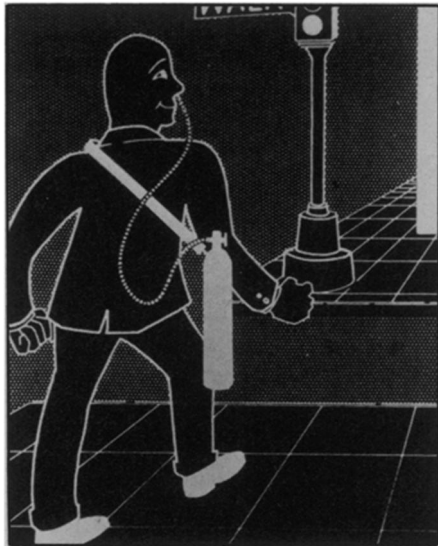
During the past decade or so, oxygen has emerged as a promising treatment for patients with chronic lung disease and for senile patients. This fact was borne out at a recent National Academy of Sciences symposium on the subject. But the treatment raises some serious scientific and socioeconomic questions, questions that must be answered before oxygen becomes widespread treatment for senility and chronic lung disease.

Thomas L. Petty and Louise Nett of the University of Colorado Medical Center, for example, have been using 24-hour oxygen inhalation therapy as part of their long-term rehabilitation of certain patients with chronic lung disease. (The patients also receive various drugs and physical therapy.) Oxygen enhances these patients' physiological conditions. It reduces the resistance of their lungs' blood vessels to the flow of blood and increases the flow of blood from their hearts. The patients also appear to live somewhat longer if they are on oxygen therapy. Perhaps most crucial, they experience an improved quality of life because the oxygen helps them leave their homes, drive a car and even hold down jobs. Nett points to one particularly satisfied patient, an older gent who lives in the mountains of Colorado and who manages to visit his favorite bar frequently, even while breathing oxygen from a portable oxygen tank.

Another clinician who has been obtaining favorable results with oxygen therapy for chronic lung disease is David C. Flenley of the University of Edinburgh. Flenley's patients particularly enjoy an enhanced quality of life because they have to stay on their oxygen tanks only 15 hours a day instead of 24. Still other success in this area is being achieved by A. Jay Block of the Veterans Administration Hospital in Gainesville, Fla. Block says one of the chronic lung patients who is particularly benefiting from continuous oxygen therapy is a 32-year-old bachelor who manages to swim, play volley ball and even visit a nudist camp while breathing oxygen from his portable oxygen tank.

Eight American studies, including the work of Eleanor Jacobs of the Veterans Administration Hospital in Buffalo (SN: 3/18/72, p. 188), have shown that placing senile patients in hyperbaric chambers (chambers whose oxygen pressure is several atmospheres) improves their memories. More recently, Block has found that having senile patients breathe oxygen continuously from a tank at home also improves their memories. Block's results

BY JOAN AREHART-TREICHEL



Should Everyman carry an oxygen tank?

are particularly impressive since his was a double-blind crossover study, where neither the investigators nor the patients knew which patients were breathing oxygen and which were breathing regular air.

Although some lung patients have benefited from oxygen treatment, many others have not. And in no patients has oxygen really reversed the unrelenting course of the disease, which eventually leads to respiratory and cardiac failure and death. A similar situation holds for oxygen treatment of senility. As E.R. Levine of Edgewater Hospital in Chicago points out, he and his team have treated 500 senile patients with hyperbaric oxygen. Only 83 showed improvement, and the improvement did not extend beyond six months except for two of the patients.

Then there is the question of what oxygen treatment is really doing to the brain and body. Petty says he does not know why oxygen improves heart function and the flow of blood through blood vessels. Jacobs has recently studied some of the changes that occur in the brains and bodies of senile patients receiving oxygen—improved electroencephalograph readings, increased oxygen in the cerebrospinal fluid, alterations in the levels of zinc and copper in the blood. Even though she and her colleagues interpret these changes as representing increased permeability of the blood brain barrier, and even though their animal studies suggest the same thing, she does not believe that increased permeability of the barrier necessarily represents the major clinical benefit of oxygen ther-

apy to memory.

If investigators are not sure what oxygen does for the diseased brain and body, they are even less sure what constitutes oxygen deficiency of the brain or body in the first place. Block believes that all of us are a bit deficient in oxygen to the brain, some persons more than others, and that such deficiency might lead to brain damage. If this is indeed the case, should some or all of us receive oxygen treatment to prevent such damage? And who precisely should have oxygen treatment for lung disease? Only those patients far along in their disease or those just getting it? If oxygen therapy were extended to all Americans with chronic lung disease, every sixth American male and every twelfth American woman would receive it at some point in their lives.

But such massive application of oxygen treatment has some serious drawbacks. For one, oxygen tanks are heavy and cumbersome. If not lugged around by hand they must be wheeled in a carrier, and a long cord from the tank must carry oxygen to the face of the recipient and enter each of his nostrils through a tube. This is hardly a practical or aesthetic way to breathe, as lung patients now on tanks will attest. What's more, oxygen treatment through tanks or hyperbaric chambers is frightfully expensive—\$40 a day with a tank and from \$50 to \$150 for one chamber treatment. Even though Medicare and Medicaid now pay for oxygen treatment for some patients who have been diagnosed as needing it, they do not pay for others. In fact, a number of patients who have been diagnosed as needing it do not use it because they cannot afford to. So supposing that oxygen treatment was extended to thousands, even millions of Americans with chronic lung disease, would taxpayers be willing to pick up the tab, especially since this disease is largely self-imposed through smoking? In fact, would taxpayers be willing to pay for widespread oxygen treatment of a disease that is not self-imposed—senility?

In view of these many obstacles, Block concludes: "I would be the last person to suggest that everyone over age 70 carry a tank of oxygen." Jacobs agrees that "it is a little too soon to widely treat senile patients with oxygen since we do not yet understand the principles of the mechanisms or the results we are getting." A Food and Drug Administration spokesman at the NAS symposium said the government will be reluctant to pay for widespread oxygen therapy until scientists de-

termine precisely what oxygen doses are appropriate for lung disease and senility.

Levine, however, stresses that the question of who should or should not receive oxygen treatment is a pressing one. He gets many calls from people who have read that oxygen can retard aging and who want oxygen treatments. Now that one-person hyperbaric chambers are available, a number of organizations are purchasing them for treatment, and Levine fears that many persons will be using them without proper medical supervision. Six persons died in Germany from such unsupervised use. Nor are portable oxygen tanks without their risks; they can create a torpedo-like hazard if damaged.

So where does oxygen treatment go from here? Investigators are not going to widely endorse it until they have more scientific information by which to judge it. Six American research centers, under the auspices of the National Heart and Lung Institute, will be attempting a study similar to Flenley's—to see whether 12 hours a day of oxygen is as beneficial to lung patients as 24 hours a day is. Jacobs wants to pool all the positive and negative results from the hyperbaric chamber senility studies to date in order to determine exactly what it is that allows some patients to profit from treatment.

Meanwhile, those companies that make equipment for oxygen treatment say they are ready to expand production or to design new and better equipment as soon as medical science gives them the word.

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