

Recommendations of the Fifth Oxygen Consensus Conference

Thomas L Petty MD and Richard Casaburi PhD MD for the Writing and Organizing Committees

- (1) To reconsider and expand on the scientific basis of home long-term oxygen therapy (LTOT),
- (2) To address present challenges in prescribing LTOT and limitations in access to LTOT because of reimbursement restrictions,
- (3) To determine how LTOT education among physicians, manufacturers, suppliers, and payers can be improved so that evolving LTOT knowledge and technology can be widely and cost-effectively disseminated, and
- (4) To discuss new challenges for LTOT research and technology development for the new millennium.

There were 54 invited attendees (see Appendix), representing physicians, other health care professionals, manufacturers, suppliers, and patients. The conference used the Delbecq Nominal Group Interactive Process¹ to develop specific recommendations. The first day of the conference featured a series of presentations that summarized the current science and practice of oxygen therapy. During the second conference day, participants divided into working groups (each group having approximately balanced representation from physicians, other health professionals, manufacturers, suppliers, and patient groups). Each group analyzed a current area of controversy in oxygen therapy and formulated recommendations. In a subsequent meeting of all conference attendees, each subgroup's recommendations were debated and consensus was achieved. These recommendations amplify and supplement the recommendations of the four previous Oxygen Consensus Conferences²⁻⁵ and offer new LTOT guidelines.

LTOT is the established standard of care for patients with chronic obstructive pulmonary disease (COPD) and chronic stable hypoxemia. Ambulatory oxygen equipment is preferred for patients who are capable of participating in ambulatory activities of daily living. Recently, the United States Health Care Financing Administration (HCFA) implemented a 30% reduction in LTOT reimbursement, with Congressional approval. The reimbursement reduction decision was based primarily on an analysis of LTOT reimbursement in Department of Veterans Affairs (VA) hospitals, which has been less than reimbursement outside VA hospitals. Some VA hospitals' costs are lower because of arbitrary limits on the kinds of systems provided, regardless of patient need. Most VA hospitals simply provide an oxygen concentrator and a small number of wheeled high-pressure oxygen tanks (usually E-cylinders). Ambulation is restricted when the patient must pull a wheeled cart. Some VA hospital contracts for LTOT are "a la carte" and therefore do not include charges for regulators, tubing, cannulae, etc. The reimbursement reduction is causing some suppliers to restrict the use of ambulatory oxygen systems in the private sector, even though they are medically necessary and prescribed by physicians.

Statements and Recommendations

1. LTOT must be viewed as a high-technology service that includes provision of a prescription of oxygen as well as a wide range of patient and equipment-focused services. It should be viewed as a compendium of services, including assessment of the patient's oxygen needs, provision of the oxygen prescription, patient education, monitoring therapeutic benefits, evaluating patient compliance, communicating with prescribing physicians, and providing and maintaining necessary equipment.

2. Minimum service standards should be established with respect to supply of LTOT services by home care providers, such as respiratory care professionals, on a 24-hour-a-day basis.

Recent emphasis on health care cost containment has promoted earlier hospital discharges and caused patients to be discharged at higher acuity levels. This increases the need for supportive management of chronically ill patients in the outpatient setting. In particular, in many patients hypoxemia has not stabilized at the time of hospital discharge, which has increased the frequency of need for home LTOT. Therefore:

3. Patients who are discharged from hospitals following an exacerbation of respiratory disease requiring oxygen therapy should be retested (recertified) 90 days after discharge, either by arterial blood gas analysis or oxygen saturation measurement. Repeat oxygenation measurements are necessary (1) to evaluate the course of the disease, (2) to determine adjustments to the oxygen prescription (ie, change oxygen flow rates), and (3) to discontinue LTOT if it is no longer necessary. If an ongoing need for LTOT is determined at the 90-day retesting, then additional arterial blood gas or saturation measurements are unnecessary.

Patient compliance is essential to the efficacy of LTOT. Compliance can be improved by initial and ongoing patient education, and by ensuring patient access to appropriate LTOT services, systems, and choices that best meet their medical needs. Health care professionals should monitor and promote patient compliance with LTOT prescriptions.

4. A more active approach to the education of patients, caregivers, and medical professionals is recommended. An LTOT Education Consensus Conference should be organized to assess, improve, innovate, and standardize LTOT education. The mission of this conference should include dissemination of the findings of the current literature, definition of new educational tools, and exploration of more effective ways to assure patient compliance.

5. Additional lobbying and education programs are needed to increase LTOT awareness on a national level. Involved groups should include the National Home Oxygen Patients Association, the American College of Chest Physicians, the American Thoracic Society, the American Association for Respiratory Care, the American Association of Cardiovascular and Pulmonary Rehabilitation, the National Association for Medical Direction of Respiratory Care, the Pulmonary Education and Research Foundation, the Department of Veterans Affairs, the HCFA, oxygen providers, and LTOT equipment manufacturers. These organizations should be encouraged to form a coalition to promote, improve, and increase education and awareness among patients, medical professionals, and others involved with LTOT and related services.

6. Ambulatory oxygen is the standard of care for patients who are able to be active both inside and outside the home, beyond the limits of a stationary system. Ambulatory oxygen equipment must be able to be carried by most patients on their person during activities of daily living. Ambulatory LTOT equipment must weigh less than 10 pounds and provide at least the equivalent of 2 L/min of continuous flow oxygen for 4 hours or more. Appropriate systems should be selected by the prescribing physician for the specific needs of the individual patient.

7. Technology development should focus on devices that are more compatible with patients' life styles, such as lighter ambulatory oxygen systems.

8. The Fifth Oxygen Consensus Conference participants agree that the United States Government Accounting Office report on the impacts on access to LTOT resulting from the recent

Congressionally-mandated reimbursement restrictions⁶ is inadequate because it did not measure access to LTOT prior to the payment cuts, thereby making it very difficult to assess the impact of the cuts. The report failed to define "access," and it did not use a random sample of the Medicare LTOT population. Therefore, more thorough, better-designed, and more accurate studies concerning LTOT access should be conducted.

9. To assure patients' rights and informed choices of LTOT delivery systems that meet medical needs, an accepted definition of "access" should be developed by clinicians. This definition should address issues such as accessibility of medical care, pulmonary rehabilitation, as well as selection and service of oxygen equipment and related supplies. Once the definition is established, it should be presented and promoted to the HCFA and other third-party payers.

10. Support of patients requiring oxygen therapy during travel should be readily available. In particular, patients have a right to medically necessary oxygen during air travel. The airline industry should develop and promote industry guidelines regarding provision of and pricing of supplementary oxygen during air travel. Those guidelines should include provision that the oxygen equipment provided aboard airplanes delivers metered and adjustable oxygen flow sufficient to meet the patient's oxygen prescription.

11. Upon initial setup and periodically thereafter, all oxygen therapy devices, particularly oxygen-conserving devices, should be titrated to the proper flow rate at rest, exercise, and sleep, to achieve maximum benefit for patients.

12. Professional respiratory therapy organizations should create clinical practice guidelines for the evaluation and monitoring of LTOT. This should include both short-term and long-term plans.

13. An LTOT patient bill of rights should be developed to assure minimum standards of care to be used by all patients and health care providers. Supporting documents should include education checklists, defined patient responsibilities, and a statement of the role of the respiratory care practitioner in the care of LTOT patients.

14. A system of patient advocacy should be developed to represent LTOT users and providers. The system should include a mechanism to resolve complaints and concerns, which could improve patient compliance and satisfaction. HCFA needs to understand the importance of patient advocacy.

15. The full and actual costs of LTOT, including the cost of electrical power to operate home LTOT equipment, should be recognized.

16. Additional research is needed to determine the medical efficacy and cost-effectiveness of various LTOT technologies and strategies. Among the highest research priorities, a study is needed to compare outcomes of LTOT delivered via stationary systems with LTOT delivered via ambulatory systems. Total costs, survival, quality of life, and utilization of hospitalization and nursing home services should be compared, and the study should be in the form of a randomized prospective controlled clinical trial similar to the Nocturnal Oxygen Therapy Trial⁷ and British Medical Research Council⁸ studies of oxygen therapy. Research is also needed on other indications for oxygen therapy, including exercise-related hypoxemia and sleep-related hypoxemia in patients with daytime normoxia.

Summary

It should be recognized that the advent of LTOT created a new health care system that is based on powerful scientific data. Oxygen therapy studies such as those by the Nocturnal Oxygen Therapy Trial Group⁷ and the British Medical Research Council study⁸ clearly demonstrated that LTOT improves

both the length and quality of life of hypoxemic COPD patients. Keeping patients at home and out of the hospital or nursing home has both psychosocial and economic benefits. Efforts should be towards enhancing, not limiting, the availability of LTOT.

The Fifth Oxygen Consensus Conference Writing Committee:

Thomas L Petty MD (Chairman)

Richard Casaburi PhD MD

(Co-Chairman)

Mary R Burns RN

Brian W Carlin MD

Kent L Christopher MD RRT

Michael Cutaia MD

David C Levin MD

Gail Livingstone

Jacquelyn McClure RRT

Jonathan C McLellan RRT

Paul A Selecky MD

References

1. Delbecq AL, Van de Ven AH, Gustafson DH. Group techniques for program planning: a guide to nominal group technique and Delphi processes. Scott Foresman: Glenview, Illinois. 1975. p 174.
2. Problems in prescribing and supplying oxygen for Medicare patients. Summary of a Conference on Home Oxygen Therapy held in Denver, February 28 and March 1, 1986. Am Rev Respir Dis 1986;134:340\N341.
3. Further recommendations for prescribing and supplying long-term oxygen therapy. Summary of the Second Conference on Long-Term Oxygen Therapy held in Denver, Colorado, December 11\N12, 1987. Am Rev Respir Dis 1988;138:745\N747.
4. New problems in supply, reimbursement, and certification of medical necessity for long-term oxygen therapy. Summary of the Third Consensus Conference held in Washington, DC, March 15\N16, 1990. Am Rev Respir Dis 1990;142:721\N724.
5. Petty TL, O'Donohue WJ Jr. Further recommendations for prescribing, reimbursement, technology development, and research in long-term oxygen therapy. Summary of the Fourth Oxygen Consensus Conference, Washington, DC, October 15\N16, 1993. Am J Respir Crit Care Med 1994;150:875\N877.
6. U.S. General Accounting Office Report to Congressional Committees: Apr, 1999. Medicare access to home oxygen largely unchanged; closer HCFA monitoring needed. Washington DC. 24 pp. GAO Publication No. GAO/HEHS-99\N56.
7. Continuous or nocturnal oxygen therapy in hypoxemic chronic obstructive pulmonary disease: a clinical trial. Nocturnal Oxygen Therapy Trial Group. Ann Intern Med 1980;93(3):391\N398.
8. Long term domiciliary oxygen therapy in chronic cor pulmonale complicating chronic bronchitis and emphysema. Report of the Medical Research Council Working Party. Lancet 1981;1(8222):681\N686.

Thomas L Petty MD FAARC is affiliated with the Department of Medicine, University of Colorado Health Sciences Center, and the National Lung Health Education Program, Denver, Colorado.

Richard Casaburi PhD MD is affiliated with the Division of Respiratory and Critical Care Physiology and Medicine, Harbor-UCLA Medical Center, Torrance, California.

Thomas L Petty MD is on the Advisory Board of In-X Corporation, Denver, Colorado. Richard Casaburi PhD MD is a consultant for Mallinkrodt, St Charles, Missouri.

Author affiliations of possible relevance to the subject of this document: Kent L Christopher MD RRT is the developer of a transtracheal oxygen therapy patent now licensed to Transtracheal Systems, Englewood, Colorado. Jacqueline McClure RRT is employed by Respironics, Pittsburgh, Pennsylvania. Jonathan C McLellan RRT is employed by Mallinckrodt, St Charles, Missouri. For the other affiliations of the Writing Committee and other conference attendees, see the Appendix.

The following corporations provided support for travel and lodging of some of the conference participants: AirSep Corporation, Apria Healthcare Inc, Lincare Inc, Mallinckrodt Inc, Respironics Inc, Rotech Medical Corporation, and Walgreens Health Initiatives Inc.

Correspondence: Thomas L Petty MD, 1850 High Street, Denver CO 80218. E-mail: tlpdoc@aol.com.