

Liquid Oxygen Therapy at home

SUMMARY

AGENCE D'ÉVALUATION DES TECHNOLOGIES
ET DES MODES D'INTERVENTION EN SANTÉ

Liquid Oxygen Therapy at Home

Report prepared for AETMIS
by Susan Law

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FOREWORD

The benefits of long term oxygen therapy for chronic obstructive pulmonary disease (COPD) have been well established and there is good consensus internationally around clinical indications for referral and treatment. There is, however, only limited evidence and guidance about the use of portable oxygen systems (liquid or gas) at home as a component of long term oxygen therapy.

The *Agence d'évaluation des technologies et des modes d'intervention en santé* (AETMIS) recently published a report on home oxygen therapy, and was subsequently asked by the Québec Ministry of Health and Social Services to examine the available evidence specific to liquid oxygen therapy, in terms of costs and benefits, and the implications for the home oxygen program in Québec.

Liquid oxygen systems for home use were introduced in the 1980s to offer patients the convenience of smaller, lighter equipment that delivered oxygen for an extended time period outside the home, in comparison to other oxygen delivery systems. There is a wide variation in the use of liquid oxygen at home and in the organization of services within and across jurisdictions. Technology in this area continues to evolve rapidly, although the specific benefits to patients have not been adequately documented. There is scant evidence regarding the contribution of liquid systems to enhanced duration and quality of life in comparison to other systems; there is some evidence that the technology has some advantages in terms of user-friendliness. Guidelines for use have recently been published in the United Kingdom and the United States that suggest criteria related to the patient's mobility, usage, and compliance.

There is no routine data available about the cost or utilization of liquid oxygen therapy in Québec, although its use is known to be rare as a 'traitement d'exception' in the public system, given the relatively higher cost and clinical concerns about added benefit. Its use is higher in Ontario where it is covered by the provincial Home Oxygen Program. It is likely that this technology would offer some benefit to active COPD patients although the identification of clinical and social criteria for assessment and monitoring should be developed by clinicians and decision-makers in Québec within the context of a comprehensive home oxygen program.

In submitting this report, AETMIS aims to contribute to informed decision-making across Québec with respect to what is currently known and what information we need in order to establish evidence-based policy and practice for the use of liquid oxygen therapy at home.

Dr. Luc Deschênes

Chairman and Chief Executive Officer

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CONFLICT OF INTEREST

None declared.

SUMMARY

INTRODUCTION

The benefits of long term oxygen therapy (LTOT) for chronic obstructive pulmonary disease (COPD) are well established. Portable oxygen systems have been assessed in an AETMIS report published in 2004. These systems, developed to provide patients who are active outside the home with an oxygen supply include compressed gas systems, liquid oxygen systems, and oxygen concentrators. This report presents the results of a comprehensive literature review, prepared in response to a request from the Québec Ministry of Health and Social Services to examine the available evidence about the indications, clinical efficiency, and cost-effectiveness of liquid oxygen therapy as well as the implications on the organization of and access to the home oxygen program in Québec.

METHODOLOGY

A search and review of the scientific literature was undertaken in a number of databases including those of Health Assessment Agencies and of the International Network of Agencies for Health Technology Assessment (INAHTA). Other documents and government reports have also been reviewed.

RESULTS

Although there are no published clinical indications for the use of liquid oxygen systems at home, the prescription criteria of the available guidelines are based on patient's mobility and usage. The lighter liquid oxygen systems are recommended for LTOT-dependent patients who need to go outside their home on a regular basis.

There are no existing data which would indicate that liquid oxygen systems allow for extended daily duration of therapy or for improved quality of life in comparison to other oxygen supply systems (portable or station-

ary). Furthermore, there is limited evidence that this technology is more user-friendly and advantageous than the compressed gas systems. Comparative costs were reported in one study conducted in Sweden which reveals that liquid oxygen is four times as expensive as the standard therapy (concentrator plus portable cylinder). Utilization of liquid oxygen systems and access to this treatment vary within and across jurisdictions, and depend on the patients insurance coverage. In Canada, the use of liquid oxygen systems is higher in Ontario where it is covered by the provincial Home Oxygen Program. In Québec, given the relatively higher cost and clinical concerns about added benefit, liquid oxygen systems are offered in the public system only as a 'traitement d'exception' to patients who spend lengthy periods of time out of their home either for work or for leisure or need high flow rates. Nevertheless, patients who wish to use these systems can buy one directly from a supplier.

New systems of portable oxygen supply, such as a portable concentrator that has been developed in Montreal and is being tested for clinical use, may in the future compete as alternatives to liquid oxygen therapy.

CONCLUSION

There is very limited information about the effectiveness of liquid oxygen therapy in comparison to compressed gas delivery systems in terms of enhanced patient compliance, mobility, or quality of life. A small minority of patients with COPD on LTOT who have active lifestyles would likely benefit from the enhanced portability of liquid oxygen therapy. The identification of clinical and social indications or assessment criteria for the use of liquid oxygen therapy should be determined through a process of consensus amongst respirologists and decision-makers in Québec, within the context of developing overall guidelines for home oxygen programs.

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